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CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

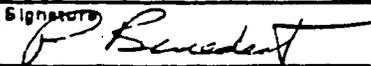
1. PROJECT TITLE  Niger Cereals Research	2. PROJECT NUMBER 683-0225	3. MISSION/AID/W OFFICE USAID/Niger
4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Center Fiscal Year, Serial No. beginning with No. 1 each FY) 883-86-05		
<input type="checkbox"/> REGULAR EVALUATION <input checked="" type="checkbox"/> SPECIAL EVALUATION		

E. KEY PROJECT IMPLEMENTATION DATES A. First PRO-AG or Equivalent FY <u>82</u> B. Final Obligation Expected FY <u>85</u> C. Final Input Delivery FY <u>89</u>	6. ESTIMATED PROJECT FUNDING A. Total \$ <u>13,373,000</u> B. U.S. \$ <u>1,600,000</u>	7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>June 1985</u> To (month/yr.) <u>July 1986</u> Date of Evaluation Review <u>August 1986</u>
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E. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. USAID support to INRAN should continue and the commitment should be long-term in nature. 2. Future support should build directly on progress made during the first phase of activities. 3. Research programs created during the first phase should be continued with some modifications to reflect progress made or lessons learned. 4. Creation of strong research-extension linkages should be a major objective of the follow-on activity. 5. Future activities should place much more emphasis on improving administration and management capabilities, achieving financial management reforms and decentralizing program management. 6. Training should continue at all levels; lower-level staff should receive particular attention. 7. Design of the second phase should begin now, in order to avoid a break in activities.	USAID/ Niger	September 1986

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS <input checked="" type="checkbox"/> Project Paper <input checked="" type="checkbox"/> Implementation Plan e.g., CPI Network <input type="checkbox"/> Other (Specify) _____ <input checked="" type="checkbox"/> Financial Plan <input checked="" type="checkbox"/> PIO/T    _____ <input checked="" type="checkbox"/> Logical Framework <input type="checkbox"/> PIO/C <input type="checkbox"/> Other (Specify) _____ <input checked="" type="checkbox"/> Project Agreement <input type="checkbox"/> PIO/P    _____	10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT A. <input type="checkbox"/> Continue Project Without Change B. <input checked="" type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan C. <input type="checkbox"/> Discontinue Project
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11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)  Idrissa Soumana, Director General, INRAN Hama Diallo, Acting Project Manager	12. Mission/AID/W Office Director Approval Signature:  Typed Name: Peter Benedict Date: 7/23/86
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NIGER CEREALS RESEARCH PROJECT  
(683-0225)

PROJECT EVALUATION SUMMARY (PES) UPDATE - PART II

13. Summary

The Niger Cereals Research Project (683-0225) was authorized in 1982 for a ten year period. An AID grant in the amount of \$ 10.6 million was approved for the first five years. Technical assistance is provided through a Collaborative Assistance contract between Purdue University (with the University of Alabama as a sub-contractor) and the National Agronomic Research Institute of Niger (INRAN).

The project purpose is to develop INRAN's capacity to undertake cereals research programs whose results can be effectively disseminated to farmers through existing extension and cooperative systems.

During the first phase, project efforts have focused on three broad areas:

1. Growth and development of INRAN's capacity to manage its research program, resources and linkages to other institutions.
2. Growth and development of INRAN's ability to support its research efforts through support service functions, i.e., soil and plant analysis, food grain quality analysis, data handling and statistical analysis, library and documentation services.
3. Growth and development of specific activities oriented toward the development of a comprehensive, integrated and systematic approach to research.

The project has made significant progress toward achieving the desired outputs, but it is distributed unevenly among the three focii. Specifically, NCR has:

1. initiated research programs in three major areas: production systems, crop improvement and farming systems. These programs are designed to increase small farmer productivity;
2. established linkages with international agricultural research institutions;
3. improved support services to research in the areas of data management and statistics, cereal quality analysis, soils analysis, in-service training programs;
4. provided long and short-term training;
5. provided infrastructure support in the form of commodities procurement and construction;
6. achieved modest improvements in INRAN's capacity to administer and manage its research programs and resources.

While progress has been made toward the achievement of NCR objectives, perhaps the most significant changes have been attitudinal: acceptance by researchers of a multidisciplinary approach to research and acceptance by policy makers of the necessity for institutional reforms. These accomplishments are important steps in the institutional development process but further effort is required, if these achievements are to become self-sustaining.

The mission Evaluation Committee recommends the following:

1. USAID support to INRAN should continue and the commitment should be long-term in nature;
2. Future support should build directly on progress made during the first phase of activities;
3. Research programs created during the first phase should be continued with some modifications to reflect progress made and/or lessons learned.
4. Creation of strong research-extension linkage should be a major objective of the follow-on activity.
5. Future activities should place much more emphasis on improving administration and management capabilities, achieving financial management reforms and decentralizing program management.
6. Training should continue at all levels; lower-level cadre (field agents and extension workers) should receive particular attention.
7. Design of the second phase should begin now, in order to avoid a break in activities.

#### 14. Evaluation Methodology

On April 29, 1986, the Applied Irrigation Research and Coordination (AIRC) Project Identification Document (PID) was reviewed in AID/Washington. The ECPR approved the project and recommended it be incorporated into Phase II of the Niger Cereals Research (NCR) Project. The ECPR also recommended that the 1985 NCR evaluation be updated by USAID/Niger and submitted to AID/Washington for review.

Following the guidance presented in State 147613, this report (1) summarizes progress made to date toward the achievement of objectives of the Niger Cereals Research Project, Phase I, (2) assesses action taken on recommendations made in the mid-term evaluation that were accepted by USAID, the Government of Niger/INRAN and Purdue (Annexes II and III), and (3) makes recommendations for Phase II activities. Sources of information include numerous discussions with INRAN and NCR staff, field visits, internal and external project reviews, INRAN and NCR technical reports and an in-depth institutional analysis of INRAN conducted by an outside consultant (Annex I).

#### 15. External Factors

A. During the twelve months since the mid-term evaluation, a number of important developments exerting direct impact on the project have taken place:

a. GON commitment to agricultural research policy reform

In early 1986, the Government of Niger signed the Structural Adjustment Program (SAP) thereby formalizing its commitment to agricultural research policy reform. The four point agricultural research policy reform program calls for INRAN to (1) define and rank by priority overall research orientations according to needs identified jointly by researchers and users of research results, (2) define and rank according to priority the research programs within the major research areas, (3) determine accurately the cost of each research program, and (4) determine recurrent costs levels. The conditions established in the SAP directly reinforce NCR project efforts (a) to improve INRAN's capacity to administer and manage its research programs, and (b) to develop priority agronomic research programs oriented to increase small-scale farmer productivity.

b. Change in INRAN leadership

The present director general, appointed in mid-1985, has brought a new type of leadership to the Institute. Partially a matter of his personal style, the change is more indicative of clear GON understanding of the kind of leadership the Institute needs in order to achieve critical institutional development goals. In terms of exerting impact on the achievement of NCR objectives, INRAN is now strongly committed to strengthening horizontal linkages between GON agencies, improving overall management capabilities and upgrading researchers' credentials. INRAN played the lead role in the recent creation of the Inter-Ministerial Committee on Agricultural Research. INRAN supports the activities of administrative and technical committees created under NCR. In recent months, INRAN has named five participants for doctoral studies, has become open to the revision of financial management practices and is working to create incentives for researchers.

c. INRAN's Increased Capacity to Perform Economic Analyses

INRAN has completed the installation of computer systems and has conducted two in-country training programs in data management and analysis. In January 1986, personnel from INRAN's Rural Economics and Agronomic Research Divisions participated in a microcomputer workshop conducted by Ithaca International Limited with funding from the USAID/GON Joint Program Assessment of rural sector activities. Participants learned to use the LOTUS budgeting program to construct single crop and whole farm budgets and to identify and present the assumptions behind each budget. The seminar provided INRAN participants with a valuable tool with which to process and analyze data generated by NCR farming systems research.

B. The assumptions outlined in the project paper remain valid. The assumptions for achieving goals are:

- 1) rains arrive on time and in quantities needed;
- 2) GON price policies remain attractive for farmers;
- 3) the marketing system maintains current level of efficiency;
- 4) GON commitment to attaining food self-sufficiency remains high.

The assumptions for achieving the project purpose are:

- 1) adequate INRAN budgets continue;
- 2) other donor support does not decrease significantly;
- 3) extension programs develop capacity to utilize more information;
- 4) inputs are available to producers.

The assumptions for achieving projected outputs are:

- 1) INRAN accepts the idea of interdisciplinary research efforts;
- 2) GON provides adequate financial resources to INRAN;
- 3) INRAN can justify and release sufficient numbers of individuals for training;
- 4) Cooperation with GON extension programs is forthcoming.

## 16. Inputs

### Projected Inputs

Twenty-four years of technical assistance

Fifty-three person-months of short-term technical assistance;

Three research associates for four years;

### Progress Made

Acting on recommendations made in the mid-term evaluation, a new chief of party was recruited. An office manager/accountant has been recruited. The Junior Agronomist completed his contract and has been replaced. The sorghum breeder, agronomist and ag. economist will remain until the end of the Purdue contract. Purdue recruited a second agronomist, who subsequently reversed his decision to accept the position; Purdue is recruiting another candidate.

The project has provided only six months of short-term T.A. in library and documentation services, intercropping, cereal quality and computer training. However, NCR has arranged a number of consultancies by INTSORMIL and was a key organizer of the 1985 INTSORMIL Workshop held in Niamey.

The project has provided two research associates to date: The first studied host plant resistance in cowpeas (24 mo.). A second associate is now in country studying Striga (5 mo.)

Twenty scholarships at the B.S.  
M.S. and PhD levels

All 20 of these participants are in training. Four are presently conducting thesis research in Niger. Acting on the mid-term evaluation recommendation to increase the number of participants, 15 additional scholarships have been added, 8 at the PhD level, 7 at the M.S. level. Five PhD participants have been identified by the GON and will leave in 1986. These scholarships will be funded by \$1.4 million made available by the renegotiation of Purdue University's contract.

Thirty person-months of short  
term training;

Twenty person-months have been provided in the areas of seed improvement, FSR, cereal quality, fertilizers, field trial design, microcomputer applications, project analysis, irrigation design, millet quality, information management and dissemination and laboratory technique.

Twelve in-service training  
programs;

Six in-service training programs were conducted during the last year in data management, plant breeding techniques, farming systems research, agronomy and cereal quality analysis. These bring the total number of ISTs to eight. In 1985, a regional workshop was conducted to train mid-level technicians in plot techniques. A second seminar was conducted on computer training.

Commodities, equipment, supplies  
vehicles;

Commodities and equipment purchases are on schedule. At the time of the mid-term evaluation, 7 vehicles had not yet been purchased; At this writing, 5 of these have been delivered, the remaining two are on order.

Remodeling and expansion of Kolo  
research station, construction of  
computer facilities and library;

Remodeling and expansion of Kolo  
research station, and construction of  
computer facilities at the soils lab,  
INRAN headquarters and Tarna research  
station have been completed.  
Library construction will begin in  
November 1986 with completion  
expected in March 1987.

Contracts for research services of CRSP programs or other international organizations.

NCR provides funds for a cooperative agreement between Texas A+M Research Foundation and INRAN Soils Lab. The purpose of the agreement is to re-orient laboratory activities toward those that directly support applied research and to develop the lab's capacity to provide accurate analyses in a timely manner. NCR has also developed linkages with the TROPSOILS, INTSORMIL and Peanut CRSPs, ICRISAT, IFDC, and IITA. These are described in the mid-term evaluation.

## 17. Outputs

### Project output targets

a. Growth and development of INRAN's capacity to administer and manage its research program, resources and linkages to other institutions.

### Progress made

As foreseen in the NCR PP, development of INRAN's administrative and management capacity will require a long-term commitment by USAID. Nonetheless, during the last two years, modest but significant progress has been made in this area. Technical and administrative working committees established under NCR have been accepted by INRAN and have made decisions on commodity purchases, short-term T.A., improving financial management and planning construction of the library/documentation center. The irrigation technical committee actively participated in the Applied Irrigation Research PID design. The training committee prepared long and short-term training plans. Another area indicative of improved management capacity has been INRAN's ability to successfully expand the FSR program. In 1985, 4 on-farm trials were conducted in 4 locations representing three agro-ecological zones. These trials included fertilizer application, intercropping, animal traction on sandy soils and improved varieties. In 1986, 6 trials at 5 sites will examine dwarf millet with cowpea, varietal resistance to millet head borer, urea placement, improved cowpea variety at lower density with insecticide application, and a comparison of ULV with Electro-

dyne applications.

Twenty long-term participants are being trained in agronomy, soil and crop science, agricultural economics, plant pathology, statistics, plant breeding, entomology, weed science, food science, soil/water management, soil chemistry, soil fertility, and irrigation. Participants will begin returning to Niger in 1987. Twenty person-months of short-term training have been provided in the areas of seed improvement, FSR, cereal quality, fertilizers, field trial design, microcomputer applications, project analysis, irrigation design, millet quality, information management and dissemination and laboratory technique.

Linkages have been established with TROPSOILS and INTSORMIL CRSPs, IITA, and ICRISAT. Maradi Rural Development Project will jointly conduct FSR trials in 1986.

b. Growth and development of INRAN's ability to support its researchers' efforts through service functions:

i. expanding library resources and their accessibility;

ii. strengthening plant and soil analysis capability;

iii. development of food grain quality analysis capacity;

A working committee has been established on library and documentation. The committee recently selected the site and approved architectural plans for the library/documentation center to be constructed under the project. The committee procured a short-term documentation specialist in 1985

A Cooperative Agreement supported by NCR funds was signed by INRAN and the Texas A & M Research Foundation in late 1985. Its objective is to reorient lab activities in order to better support agricultural research. Inputs provided under the Agreement include long and short-term T.A. in soils chemistry, soils physics, soils fertility, training for laboratory technicians, training in equipment maintenance, rehabilitation of selected equipment and commodity procurement.

Through the provision of short-term T.A., in-service training and commodity procurement, INRAN's cereals

quality laboratory now provides support to INRAN's millet and sorghum breeding programs.

iv. increasing data handling and statistical analysis capability;

Microcomputer systems have been installed in the Rural Economics Divisions at Niamey and Tarna and at the Soils Laboratory. In 1985-86, two short-term consultancies and two in-service training programs have provided INRAN personnel a foundation in descriptive statistics, ANOVA and budgeting and a comprehensive computer-based data management system.

v. improving the in-service training programs for research support staff;

Eight in-service training programs in the areas of plant breeding sorghum testing for food quality, FSR techniques in agronomy and agricultural economics, data management, and data collection have been conducted. Successful expansion of on-farm trials, better management and supervision of trials by technicians, higher quality of data collection and management indicate improvement in in-service training programs.

vi. expanding availability of farm machinery for support of research.

Apart from procuring two tractors, this objective has been virtually ignored.

c. The growth and development of specific activities oriented around a comprehensive, integrated and systemic approach to research:

Farming systems data collection and analysis is underway in three departments and two ecological zones.

On-farm production systems research is being conducted in three ecological zones.

Cooperative experiments are conducted with ICRISAT, TROPSOILS, INTSORMIL and regional productivity projects.

Five technical committees have been formed: millet, sorghum, leguminous crops, irrigated crops and farming systems research.

## 18. Purpose

As stated in the Project Paper, the purpose of the Niger Cereals Research Project is "to strengthen the capacity of INRAN to undertake cereals research programs whose results can be disseminated to farmers via the extension and cooperative systems." End of Project Status (EOPS) conditions and progress made toward achieving these conditions are listed below.

End of Project Status

a. Three major research areas will be created and oriented to increasing small farmer productivity.

i. creation of interdisciplinary crop improvement research program for millet, sorghum and cowpea.

ii. farming systems research in two administrative departments

iii. cereals production system research program in at least two ecological zones and regions (departments).

Progress Made

Three major research programs oriented toward increasing small farmer productivity have been initiated:

A sorghum improvement program comprising date-of-planting-and-variety trials, yield trials, and breeding nurseries is underway on INRAN stations and sub-stations throughout Niger. F1 hybrids have been developed. Nearly 200 are being evaluated in 1986

A cowpea improvement program is underway in Maradi and Niamey departments. Efforts are focused on screening for thrips resistance and breeding for bruchid beetle resistance.

The millet improvement program is conducted by host country national researchers. Its principal efforts include breeding for head borer resistance and shorter cycles.

Farming systems research is being conducted in Niamey and Maradi departments.

Trials are being conducted on millet-cowpea intercropping, urea application methods, animal traction, crop loss assessment improved varieties and pesticide applications. Cropping systems budgets and labor profiles have been developed for six villages along the Niger River and three villages in Madaroumfa. Model farm types are being developed with these data.

Marketing studies (price information and quantity data) and agricultural transactions surveys of these same regions have been underway since 1984.

Cereals production systems research is being conducted in three agro-ecological zones.

An intercropping trial consisting

of plant density, planting geometry fertility and varietal factors was conducted in 75 villages under farmer management in 1985. A researcher managed fertilizer application methods trial was conducted in these same villages.

b. The administrative, technical and support functions and structures will have been strengthened and oriented to enhance the productivity of INRAN and the scientists working for it.

Administrative functions have been strengthened by the creation of working committees and by the institution of some improved financial management practices. However, more training, a larger staff -- more time -- is needed in order to realize major progress in this area.

Technical skills have been upgraded for researchers, field agents and laboratory technicians via technical assistance and training. Considerable progress should be made as long-term participants return to Niger to work for INRAN.

INRAN's capacity to support research with services has been strengthened: the cereals quality analysis lab now functions; the soils lab is being re-organized; the Rural Economy Division has developed a foundation in computerized data management and statistics.

Strong national research/extension linkages will have been established under the overall National Cereals Program and additional linkages with several international entities operating both within and outside of Niger will have been strengthened.

National research-extension linkages remain weak, in part due to the delayed start-up of the extension component of NCR's companion project, Agricultural Production Support. Also, NCR is conducting on-farm trials; it is not quite to the point of beginning demonstrations. Linkages with international organizations have been significantly strengthened under the NCR project. INRAN has established long-term relationships with ICRISAT, IITA, TROPSOILS, INTSORMIL and the Peanut CRSP.

#### 19. Goal/Subgoals

To assist Niger in achieving self-sufficiency in food production and improve rural standards of living.

## Progress toward achieving goals

The development of better agricultural technologies is essential to the achievement of increased productivity, hence to food self sufficiency and a higher standard of living. Development of INRAN's capacity to undertake applied agricultural research programs is, likewise, a critical step in the achievement of Niger's primary long-term development goal. NCR has contributed to this goal through (1) the creation of three major research programs oriented toward increasing small-scale farmer productivity, (2) training of INRAN personnel at many levels and (3) by providing a highly skilled multi-disciplinary team of technical assistance.

### 20. Beneficiaries

The direct beneficiaries of the NCR project are (1) the National Agronomic Research Institute of Niger (INRAN), 2) INRAN professional and technical staff, 3) recipients of long- and short-term training provided under the project. Other direct beneficiaries include the national agricultural services, particularly the extension services, regional productivity projects, international agricultural research organizations active in Niger and the Agricultural Support Project. Principal indirect beneficiaries will be the farmers of Niger who increase their agricultural production by adopting new products or practices developed through agricultural research. Other indirect beneficiaries include consumers who benefit from improved nutrition due to a more adequate food supply.

### 21. Unplanned Effects

In 1986, for the first time, INRAN, QVAHA and the line services of the Ministry of Agriculture conducted joint annual technical review and planning meetings. The decision to combine meetings that had always been held separately was largely influenced by INRAN, which supported a multi-disciplinary approach to planning of national rural development strategies. INRAN's position reflects the degree to which the Institute has accepted the principle of an interdisciplinary approach to the design and execution of agricultural research programs.

### 22. Lessons Learned

Improvement of administrative and management capabilities is an important institutional development objective of this agricultural research project. While expatriate researchers may offer host country colleagues valuable guidance in program planning, organization, determining logistical support requirements, etc., the design and implementation of administrative and management reforms is not usually within a researcher's terms of reference. Future assistance to INRAN should include some specialized training and technical assistance in the management and administration of research programs.

### 23. Special Comments or Remarks

#### A. Evaluation Conclusions

While considerable progress has been made toward the achievement of NCR project objectives, perhaps the most significant gains have been attitudinal changes: (1) gradual acceptance by some researchers of the multidisciplinary approach to research, the value of on-farm trials, the

importance of farmer participation in research and the significance of economic analyses, and (2) acceptance by administrators and policy makers of the critical need for prioritization of research activities, financial management reforms, decentralization of program management, real linkages into extension and overall better management of resources.

With regard to INRAN researchers, it must be understood that these changes in perception represent the earliest stage of institutional reform; the project has successfully initiated research programs in farming systems, production systems and crop improvement, but these programs are by no means established in an institutional sense.

INRAN's willingness to develop and execute much needed policy reforms is also a fairly recent development. Thus, NCR has been unable to make much headway in strengthening linkages with extension or improving administration and management of research programs and resources. The project has just begun to address financial management problems.

In 1981, when this project was designed, five constraints were identified as seriously affecting INRAN's ability to provide useful research results to the agriculture sector. These were:

1. the Institute's inability to obtain sufficient numbers of trained scientific manpower;
2. the Institute's inability to mobilize effectively its resources, particularly in the area of providing support services to research;
3. insufficient interdisciplinary interaction among researchers;
4. insufficient effort focused on production systems research programs;
5. excessive time spent by researchers on administrative duties.

In evaluating the NCR project, USAID finds: (1) The project has succeeded in decreasing the severity of the first four constraints; (2) Little (if any) progress has been made toward decreasing the amount of time researchers spend on administrative duties; (3) Considering the baseline in 1982, considerable overall progress has been made.

The Evaluation Committee concludes:

The mission Evaluation Committee recommends the following:

1. USAID support to INRAN should continue and the commitment should be long-term in nature;
2. Future support should build directly on progress made during the first phase of activities;
3. Research programs created during the first phase should be continued with some modifications to reflect progress made and/or lessons learned;
4. Creation of strong research-extension linkage should be a major objective of the follow-on activity.

5. Future activities should place much more emphasis on improving administration and management capabilities, achieving financial management reforms and decentralizing program management.

6. Training should continue at all levels; lower-level cadre (field agents and extension workers) should receive particular attention.

7. Design of the second phase should begin now in order to avoid a break in activities.

B. Annexes

Annex I Institutional Analysis of INRAN (44 pages)

Annex II Mid-Term Evaluation Recommendations (PES Part I; one page )

Annex III Summary of Actions Taken on Mid-Term Evaluation Recommendations (one page)

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
WASHINGTON DC 20523

MEMORANDUM

August 11, 1986

TO: See Distribution

FROM: AFR/PD/SWAP, Nancy M. McKay *mem*

SUBJECT: Niger Cereals Research Project (683-0225): Update of  
Mid-Term Evaluation

Attached is an update of the mid-term evaluation of the Niger Cereals Research Project. Please provide any comments to me at Room 2733A, New State.

Attachment: a/s

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INSTITUTIONAL ANALYSIS OF THE INSTITUT  
NATIONAL DE RECHERCHES AGRONOMIQUES  
DU NIGER (INRAN)

Prepared for  
USAID/Niger under Indefinite Quantity Contract  
No. PDC-1096-I-00-4160-00, Work Order No. 13.

by

Thomas M. Painter, Sociologist  
July 4, 1986  
Niamey, Niger

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## I

### INTRODUCTION

The analysis to follow examines the capacity of the Institut National de Recherches Agronomiques du Niger to implement programs currently being planned by USAID and the Niger Government to provide support for applied research on irrigated agriculture through the Applied Irrigation Research and Coordination Project (683-0250) in addition to support which has been given to applied research on rainfed (dryland) agriculture since 1982 under the AID-financed Niger Cereals Research Project (No. 683-0225). The information contained herein is based in part on contacts with INRAN and USAID personnel and with representatives of other government agencies involved in endeavors to improve rainfed and irrigated agricultural production in Niger (see Appendix A to this report) during the period from 16 June to 04 July 1986. In addition, a selection of relevant documentation was reviewed for the study. A list of documents consulted for the study is found at the end of the report. I would like to thank all those persons who gave of their time during numerous interview sessions. Members of the USAID/Niger mission and the Project Paper team also made numerous constructive remarks on a first draft of this report, and their helpfulness is greatly appreciated. Responsibility for the final form of the present report, however, is the author's alone.

## II

### OVERVIEW OF INRAN'S DEVELOPMENT: REORIENTATING AGRONOMIC RESEARCH IN NIGER TO PROMOTE NATIONAL SELF-SUFFICIENCY IN FOOD PRODUCTION

In the wake of one of the worst droughts and famines of this century, the Government of Niger (GON) created the Institute National de Recherches Agronomiques (henceforth INRAN, or the Institute) in 1975, by means of Ordinance No. 75-1/PCMS, of 07 January, Decree No. 75-37/PCMS/MER/C of 13 February, and Decree No. 75-91/PCMS/MER/C of 05 June. The Institute is an autonomous research institute, and as such, is a permanent feature of government structure, along with several other institutions created to conduct research in specific areas; among them, the National Office for Research on Solar Energy (ONERSOL), and the National Office for the Production of Pharmaceutical and Chemical Products (ONPPC). At the time of its creation, INRAN was under the authority of the Ministry of Rural Economy and Climate, which later became the Ministry of Rural Development (MDR). INRAN thus became the single national successor of several branches in Niger of French colonial research institutes: IRAT, the Institut de Recherche Agronomique Tropicale; IEMVT, the Institut d'Elevage et de Medecine Veterinaires des pays Tropicaux; CTFT, the Centre Technique Forestier Tropical, etc., organized by the French state to serve colonial and metropolitan needs for strategic agricultural crops throughout tropical areas of the world under French domination.

INRAN was given responsibility for all applied agronomic research in Niger. In practical terms, the Institute's mandate during the early years of its existence was clearly shaped by the difficult period of drought from 1968 to 1974. INRAN was instructed to conduct research related to national food production needs, and to make the findings of its research available to rural populations through the extension programs of relevant line services operating within the (then) Ministry of Rural Development--Agriculture, Forestry and Wildlife, and the Livestock service. The Ordinance which created INRAN called for research in the following key areas: ecology; agriculture; zootechnology; forestry; rural economy; and training and teaching.

In response to the crisis in Niger's agriculture caused by more than five years of drought, INRAN's initial concerns were focused largely on ways to improve rainfed agricultural production, overwhelmingly the basis for food consumption by the country's rural and urban populations, and for Niger's agricultural exports. INRAN, with eventual help beginning in 1982 from the AID-funded National Cereals Project (NCR), mobilized its resources to develop improved varieties and more effective techniques for the production of staple grain crops most important to the country's inhabitants: millets, sorghums, cowpeas, and to a lesser extent, groundnuts. INRAN's research activities were oriented toward supporting government strategies to promote the goal, set by Lt. Col. Kountche shortly after taking power in 1974, of national self-sufficiency in rainfed

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From the time of its creation through the early 1980s, INRAN research programs were oriented toward the study of narrowly defined technical themes; e.g., resistance of varieties to drought; higher yields; response to fertilizer, etc. Since the 1980s through the present, INRAN's approach to research has gradually changed from a narrow technicist perspective of production to a view in which a wider range of production issues is considered. While it is premature to say that INRAN has embraced Farming Systems Research as defined in American practice, there are signs of encouraging movement toward a more global view of production as we will see in Part III below.

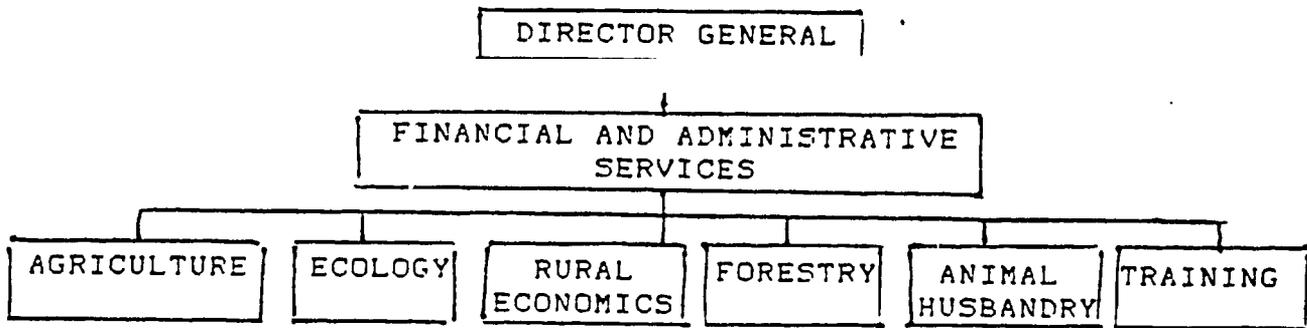
### III

#### STRUCTURE OF RESEARCH ORGANIZATION WITHIN INRAN

The organization of INRAN as created under the authority of the Minister of Rural Economy and Climate, reflected the research priorities assigned the Institute, and was composed of a Director General, an Administrative and Financial Service, and six research departments or divisions. The organization of INRAN at the time of its creation in 1975 is shown in Figure 1 below.

As part of its heritage from IRAT and its other predecessors, INRAN was equipped with several research stations, substations, and support units. Table 1 below shows the location of each component of INRAN's current research infrastructure in Niger.

Figure 1  
INITIAL ORGANIZATION OF INRAN (1975)



In addition to the locations shown in Table 1, a full description of INRAN activities in Niger would also include a listing of all trial research sites associated with each of the half-dozen major productivity projects in the country. On a routine basis, these trials, which are organized and evaluated by INRAN, are carried out during the cultivation season by field agents of the Agriculture service in Niger. Thus on the basis of a conservative estimate of one productivity project in each of the six of Niger's departments having some potential for improved rainfed agricultural production, and supposing that each project operates five trial plots each year, an additional thirty sites, or sources of agronomic data for INRAN, could be easily, be added to the research infrastructure of the Institute itself.

Since its creation, INRAN has experienced several changes in its structural location within the government, and considerable internal differentiation has occurred as the Institute's research foci have become more specialized. From 1975 to 1979, INRAN was part of the Ministry of Rural Economy and

Table 1  
LOCATIONS OF INRAN RESEARCH SITES

Type of Infrastructure	Principal Research Area (INRAN division)			
	Agriculture (DFA)	Ecology (DFE)	Forestry (DRF)	Veterinary (DRVZ)
Research Center	Tarna (CNRA)(a)			
Research Station	Tarna, Kolo, Agadez, Tillabery, Gabagoura	Tarna, N'Dounga, Chical, Bengou	N'Dounga, Niamey-Aviation	Tarna, Kolo, Kirkissoye, Ekrefane, Bengou
Research Substation	Bengou, Ouallam, Bonkougou			
Field Support Points	Kawara, Kalapate, Lossa, Mageria		Lossa, Karma, Saga, Goudel, Ekrafane, Bengou, Sakoira	
Irrigated Perimeters (Rice)	Libore, Saga, Seadia, Seberi, Tara			

<sup>a</sup> Centre National de Recherches Agronomiques

Climate: from 1979 to 1985, it was placed under the authority of the Ministry of Higher Education and Research. In 1985, INRAN returned to the Ministry of Rural Development. MDR was subsequently broken up in October 1985, and most rural development services, including INRAN, were placed under the authority of the Ministry of Agriculture. Principal features of

IV

DISTRIBUTION AND QUALIFICATIONS OF INRAN STAFF

4.1 - Nigerien Researchers and Support Staff

INRAN's Nigerien research staff (which here includes researchers and associated technicians) consists of 107 persons, who are distributed across seven levels of qualification based on the classification scheme of the government's civil service system (la Fonction Publique). Table 2 shows the number of Nigerien research personnel at INRAN within each qualification category.

Research staff having A1 and A2 level qualifications are considered bonafide researchers by INRAN, and total 32. A1-level personnel must have minimum training equivalent to the French Maîtrise, roughly equivalent to the American B.S., although many A1 staff have degrees equivalent to an American M.S. degree. They may also hold Ingenieur-level degrees, roughly equivalent to an American M.S. degree, or higher-level degrees (3rd cycle doctorates, etc.). The remainder of the research staff is composed of technicians of varying qualifications.

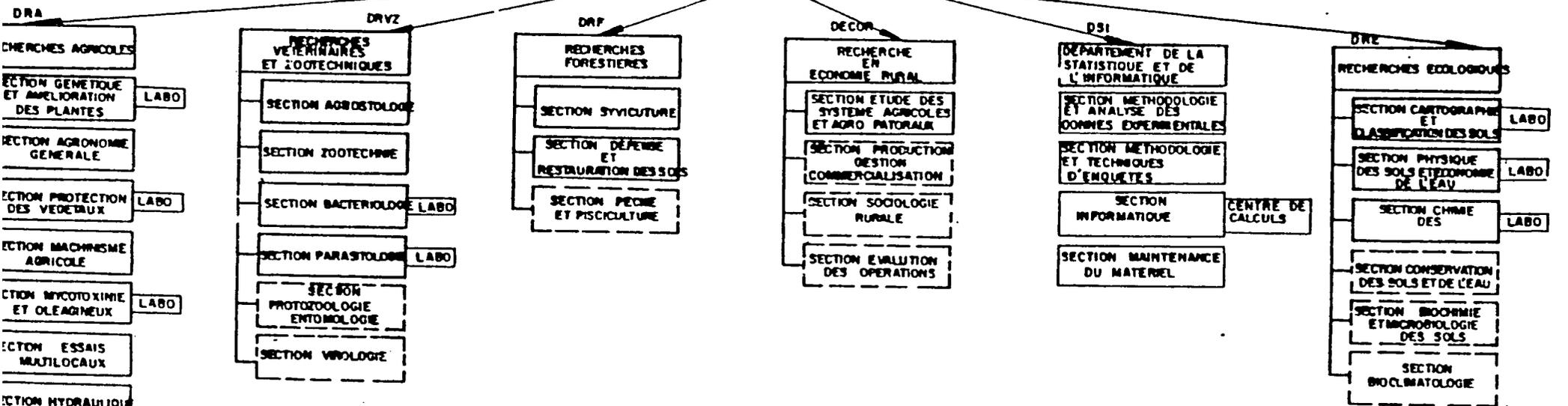
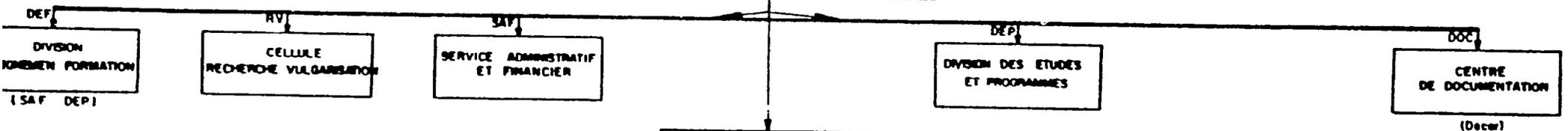
The same 107 Nigerien research staff members are distributed across the General Directorate of INRAN and the Institute's six major research divisions or departments. This distribution is shown in Table 3 below. Details on the training background of personnel in administrative positions are given in Appendix C.

The heavy emphasis given by INRAN programs to rainfed agriculture is apparent in the distribution of total researchers

# INSTITUT NATIONAL DE RECHERCHE AGRONOMIQUE DU NIGER

I.N.R.A.N

DIRECTION GENERALE



DRA	DRF	DRE	DRVZ
1 Centres : CNRA TARNA	1 Stations	Stations	Stations
2 Station : TARNA, KOLO, AGADEZ, TILLABERY, GABAGOURA	N'DOUNGA NAMEY/AVIATION	TARNA N'DOUNGA CHICAL BENGOU	TARNA KOLO KIRKISSOYE EKRAFANE BENGOU
3 Sous-Station : BENGOU, OUALLAM, BONKOUKOU	2 Points d'appui		
4 Points d'appui : KAMARA, KALAPATE, LOSSA, MAGARIA	LOSSA KARMA SAGA GOUDEL EKRAFANE BENGOU SAKOURA		
5 Perimeters (Régiculture) : LIBORE, SAGA, SAADIA, SEBERI, TARA			

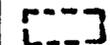
 :  
SECTION NON ENCORE  
FUNCTIONNELLE

Table 2  
DISTRIBUTION OF NIGERIEN RESEARCH STAFF  
BY LEVEL OF QUALIFICATION

Title within INRAN	Professional Category	Number in category
Ingenieurs d'Agriculture et Docteurs Veterinaires	A1	24
Ingenieurs des Techniques d'Agriculture	A2	8
Ingenieurs Geometres Adjoints	A3	5
Conseillers Agricoles et Forestiers	B1	18
Conducteurs d'Agriculture	B2	8
Agents Techniques d'Agriculture	C1	35
Moniteurs d'Agriculture	D2	9
Total		107

Source: INRAN (1986a)

example, accounts for half of all the Institute's more qualified personnel, while the remaining 38.3% of personnel who are not involved in administration are distributed among all other research divisions. INRAN's capacity to pursue serious irrigation-related research is limited at present, and certainly requires reinforcement of the kind envisioned by the applied research project. Currently there are only two persons on the staff who are qualified to carry out irrigation-related research. These consist of an irrigation specialist (who is in an M.S. program in the U.S.) and a rice breeder. While the

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Table 3

DISTRIBUTION OF NIGERIAN RESEARCH STAFF BY LEVEL  
OF QUALIFICATION WITHIN INRAN  
(DIRECTORATE AND RESEARCH DIVISIONS)

Location within INRAN	Level of Qualification							Total	Percentage of Total
	A1	A2	A3	B1	B2	C1	D1		
D G	3	1	1	2	1	4	1	13	12%
D R A	10	1	2	10	5	20	5	53	49.5%
D R E	4	4	0	2	1	5	1	16	15%
D R V Z	4	0	1	1	0	2	1	9	8.4%
D E C O R	1	2	0	2	1	3	0	9	8.4%
D R F	1	1	0	1	0	1	0	4	3.7%
D S I	1	0	1	0	0	0	1	3	2.8%
Total	24	8	5	18	8	35	9	107	99.8%

Source: INRAN (1986a)

Note

- D G: General Directorate (Direction Generale)
- D R A: Agricultural Research Division (Division de Recherches Agricoles)
- D R E: Ecological Research Division (Division de Recherches Ecologiques)
- D R V Z: Veterinary and Zootechnical Research Division (Division de Recherches Veterinaires et Zootechniques)
- D E C O R: Rural Economy Research Division (Division de Recherches en Economie Rurale)
- D R F: Forestry Research Division (Division de Recherches Forestiers)
- D S I: Statistics and Data Division (Division Statistique et Informatique)

latter is a valuable addition to INRAN resources, rice breeding is highly specialized and does not respond to a wide variety of possible irrigation research themes currently being considered by the government as a means of promoting a more diversified basis for agricultural production in Niger. As we will see in Section 7.3, progress is being made in the strengthening of research capacity in the area of irrigation-related work.

#### 4.2 - Expatriate Research Staff

The small number of A1 and A2 level Nigerien research staff at INRAN are complemented by a contingent of 36 expatriate technical assistants from more than a half-dozen countries, with qualifications ranging from the B.S. degree (e.g., U.S. Peace Corps Volunteers) to the Ph.D. (in, for example, agronomy).

#### 4.3 - Nigerien Auxiliary Staff

INRAN operations also require a sizable number of auxiliary personnel. Currently, they number about 424, and include a wide range of skills; among them, mechanics, typists, illustrators, carpenters, unskilled laborers, drivers, and laboratory aides.

### STATUS OF INRAN RESEARCHERS

In an operational sense, INRAN is an autonomous research institution within the Ministry of Agriculture, but its researchers are part of the government civil service, and as such, are subject to all civil service rules and regulations.



Basic features of the present civil service system (created in 1959) were, like elements of INRAN itself, inherited from French colonial structures. The civil service promotion scheme provides for movement within the four major categories we have seen in Table 2: A, B, C, and D. Each of these consists of four grades, which may contain, in turn, from one to four scale levels. A simplified schema of civil service organization is found in Appendix B. Thus the highest possible ranking within the civil service would be Category A, Exceptional Class (having only one scale level). The lowest, entry-level ranking would consist of Category D, Second class, First level scale.

Movement from one scale level to the next occurs as a function of time-in-service, and advancement occurs automatically every two years. Movement from one grade to another depends on a combination of factors: seniority in the preceding level; satisfactory behavior (i.e., lack of disciplinary problems); and, most important of all, evaluation grades given to the individual by his/her superior within a given service. Movement from one category (A, etc.) to the next is possible solely on the basis of formalized training, taken abroad, or at the University of Niamey. Under this system, access of INRAN research personnel to advanced training programs has no necessary relationship to the Institute's needs for upgrading of staff as specifically related to the Institute's research requirements. Instead, they are subject to the same criteria used by the civil service for the allocation of training opportunities for all civil servants--progress along the steps outlined above.

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In 1982, at the request of the President, an interministerial committee was created to prepare a proposal for special status of INRAN research staff. The proposal was submitted to the Ministry of Higher Education and Research, in 1984. To date, there has been no action on the request. An important element in the proposal is a career advancement scheme based on satisfaction of several criteria judged by the committee to be particularly relevant to professional researchers. Among them are level of university education, research performance, and production of publications.

Certainly one major obstacle to approval/implementation of the proposal any time during the short to medium-term is the current fiscal situation of the government, for implementation of a special status arrangement would entail added recurrent costs (higher salaries, bonuses, allowances, etc.; see below).

## 5.1 - Difficulties with the Present System

### 5.1.1 - Incentive Structure and Advancement

Many young Nigeriens have aspired to a position in the civil service since its creation, for posts in the service have long been viewed as sources of security. Until two years ago, most all secondary school graduates in Niger looked forward to-- and received--positions within the service. A combination of severe fiscal constraints and continuing production of graduates has put an end to this. Once in the service, as we have suggested above, time and acceptable evaluations are more important to advancement than performance per se. Thus INRAN researchers find themselves in a system which, in their view,

does not reward research. According to most respondents contacted during this study, the real rewards within the civil service system go to those personnel who simply put in their time and who do not irritate their superiors. Advancement under these conditions is very gradual, but certain to happen eventually. In general, there appears to be very little incentive for above-average performance.

In addition to operating within an incentive structure which is perceived by INRAN personnel as being extremely limited, INRAN researchers consider themselves to be deprived relative to persons involved in research programs at the University of Niamey and at associated institutions, for example, the Institut de Recherches en Sciences Humaines. Personnel in these latter institutions enjoy higher salaries and more rapid career advancement. They also have greater access to possibilities for travel to regional and international scientific conferences and workshops. These are critical sources of contacts and important fora for the exchange of information on the work of scientists working in Africa and elsewhere in the world. Finally, University of Niamey faculty another benefit not afforded to members of the civil service: a housing allowance. Civil servants gain access to these resources only on an extraordinary basis. Most commonly, this occurs through assignment, by presidential decree, to important administrative positions, such as that of project director. Even though several INRAN research staff occupy positions of responsibility (see below), no one except the Director General is recognized as such by decree. All

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to as "responsables," and the perquisites associated with this status in the Institute are quite modest.

While resources are meager, there are a few possibilities for improving the status of INRAN researchers, and insofar as possible, the Institute has attempted to provide research staff with some access to these advantages. The first consists of a monthly bonus given to persons engaged in research activities, and to supporting staff. A-level research personnel receive an additional 13,000 CFA francs each month (equivalent to about \$37 at current exchange rates); B-level personnel receive a bonus of 10,000 CFA francs (equivalent to \$28), and C and D-level cadres receive a 7,000 CFA franc (\$20 equivalent) monthly bonus. A second type of bonus, also modest, is given to persons in positions of responsibility within the Institute. This amounts to 10,000 francs (\$28) per month and is given to heads of services, divisions/departments, and sub-divisions. There has been a proliferation of the latter since the creation of INRAN in 1975, and they now number about 32, although not all are operational (see Figure 2).

Thus in absolute and relative terms, and from their perspectives, as well as from those of government workers and institutions with which they are linked on a day to day basis, INRAN researchers suffer from a number of structural handicaps.

Concretely this "disadvantaged" status manifests itself in several ways. Several INRAN research staff offer courses in their areas of specialization at the University of Niamey. Their position in the civil service sets them apart, however, from

their university colleagues whose status is higher. Instead of linking up on a par with university faculty, INRAN personnel who teach are classified simply as "part-timers." In their relations with members of other rural development services, also under the jurisdiction of the civil service, INRAN research personnel face a different set of problems. Without the upgrading made possible by medium and longer term university studies, or special training programs, there is not a great deal to differentiate many entry-level INRAN researchers from their consociates, and in some cases, former fellow class mates who are assigned to other rural development services. Under these conditions, attempts by INRAN researchers to set up operational links with service field personnel (having very similar backgrounds) for the implementation of research programs have occasionally worked out unsatisfactorily. While part of the difficulties faced by INRAN in the form of lack of response, follow-up, and feed-back from members of field-level services is doubtless due to the work loads of the latter, it is also very possible (hence worthy of closer attention) that unsatisfactory response to INRAN research endeavors is also the result of an intangible, yet real "image problem," or credibility gap which has bothered the Institute since its creation. While it is true that INRAN's self- and public image has improved a great deal since the years immediately after its creation, there is a feeling among personnel contacted that considerable improvement is still needed.

The recent arrival of a new Director at INRAN, who has very

whose presence is such that he commands an audience for his ideas, promises to contribute to the pace of improvements mentioned above.

### 5.2 - Recruitment of Personnel

One result of the situation described above is that, seen from the exterior, there is little to attract potential candidates to INRAN's research staff. The rewards are meager, and the possibilities for career advancement are limited. In fact, few researchers have joined the INRAN staff since the early 1980s.

Another, potential difficulty stems from the procedures for staff recruitment, set up shortly after INRAN was founded. Personnel are detached from other rural development services, principally the Agricultural Service, but also from the Livestock and Forestry services. Thus, aside from the Director General, INRAN has no permanent research staff of its own. Once assigned to INRAN, cadres are neither required to stay (they can and do request reassignments); nor is there any guarantee that should they want to stay, they will not be re-assigned by their service of origin. In practice, however, INRAN staff turnover is not high, and several persons detached from other services have been with the Institute for more than eight years.

A final potential source of some staffing difficulties is an unofficial yet practical policy among MDR services in the past of assigning persons to INRAN who either do not fit in well with their parent services, or who are considered to be problem

VI

LINKAGES BETWEEN INRAN AND OTHER INSTITUTIONS INVOLVED  
IN PROGRAMS TO IMPROVE AGRICULTURAL PRODUCTION

6.1 - Linkages with National Rural  
Development Institutions

INRAN has operational linkages with each of the major rural development services in Niger. Interviews with all INRAN section heads and representatives of rural development services reveal that in practice, these horizontal linkages between "sibling" services are highly specific, and often weak, in part for reasons described above. "Specificity" here refers to links of a contractual nature between INRAN and rural development services (and, occasionally, projects) for specific services, such as soil analysis, done on a job by job basis. We must point out, however, that it is generally the case that horizontal linkages between rural development services in Niger are weak. The weaknesses of these links were alluded to by all persons interviewed for purposes of this study. It is noteworthy, for sake of maintaining a perspective on the situation, that such linkage weaknesses have been the source of frequent operational difficulties within all of the major "integrated" rural development projects in the country. While we will not belabor points which have already been made elsewhere, it is necessary to emphasize that this situation is not peculiar to INRAN.

The predominance of vertical, hierarchical linkages and communication channels within individual rural development services, over horizontal, integrative, linkages and

communications flows between services, even within the same ministry, often results in patterns of routine program implementation in which minimal, and occasionally no, detailed information is shared by service representatives in the field.

Systematic exchange of information is limited to formal, institutionalized encounters between services--described by persons interviewed as the "official framework" (cadre) for contacts and cooperation. Once each year, rural development services within the Ministry of Agriculture meet for purposes of evaluating past programs and planning activities for the coming year. INRAN personnel participate in these yearly meetings. In addition, INRAN holds annual meetings of its own to which representatives of other rural development services are invited.

Aside from these formalized meetings, however, and the contractual links described above, there are few occasions for exchange of information or views, and it appears that few initiatives are taken on a personal basis among service representatives to provide or secure information outside the official fora. There are exceptions to this generalization, of course, but the generalization holds true. During several interviews, for example, INRAN was obliquely criticized, for not being sufficiently forthcoming about its field research activities. The same critics also admitted that they rarely sought out information on their own. Without an official, sanctioned linkage of some kind, little occurs in the way of information exchanges.

We must also stress that under its new Director, INRAN is

2/6

relevant rural development services become stronger, more systematic, and more effective. We expect that considerable effort will be made by INRAN in this direction.

Having said this, a word of caution is in order. No matter how dynamic and open INRAN may be to the perspectives of USAID's policy directions in agricultural development, improvements of the kind called for above cannot be made by the Institute alone. This may seem to state the obvious, but it is essential that all USAID planning for support in the areas of applied research be made with a keen awareness of the necessity for other rural development services in Niger to take initiatives and to reciprocate if INRAN is to carry out the mandate assigned to it by the government in 1975, and if the Institute is to successfully implement the applied research programs being supported by USAID. It is also noteworthy that several AID-financed projects are already promoting the development of horizontal linkages between services in areas relevant to our concerns. For example, the Agricultural Production Support project is involved in extension. In addition, there is considerable donor support for organizational modifications of this kind.

#### 6.2 - Linkages with International Institutions

INRAN currently has numerous linkages with international agronomic research organizations. A partial list includes ICRISAT, ILCA, IITA, INTSORMIL, WARDA, IFDC, the Institut du Sahel, IFDT, and TROP SOIL. In most cases, INRAN is actively

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involved in joint research programs with these organizations. In other instances, for example, ILCA, the Institute has agreements which allow for occasional personnel exchanges for training purposes.

## VII

### CAPACITY OF INRAN TO IMPLEMENT APPLIED RESEARCH PROGRAMS

#### 7.1 - Past and Present Approaches to Research

The creation of INRAN in 1975 coincided with, and due to political reasons, contributed to, the withdrawal of French technical assistance associated with the predecessor institutions described in the first part of this report. The reality of a shrinking base of qualified technical assistance, combined with an extreme shortage of Nigerien research personnel during INRAN's first years, to which was added the necessity for INRAN to respond to a catastrophe in Nigerien agriculture, all contributed to what may be described as a "crisis response" posture of the Institute. INRAN's research agenda were narrowly focussed on drought-related issues: varietal resistance to drought, higher yields, shorter maturation cycles, etc.

This narrow "thematic" approach continued through the early 1980s, but since then, according to sources within and without INRAN, there have been encouraging changes. More and more, INRAN's approach to production problems employs something resembling a systems approach. Without exaggerating, it is accurate to say that INRAN's research programs endeavor to deal with a range of interrelated factors (agronomic, ecological,

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socio-economic) as part of an ensemble or a "production complex," rather than examining issues in isolation.

One example of this larger perspective on the production process can be seen in studies being done by INRAN's Division of Rural Economic Studies (DECOR) on the allocation of labor time on selected irrigated perimeters in riverine and interior areas of the country. In addition to the descriptive data already produced on characteristics of production, DECOR is also seeking to throw light on peasant resistance to irrigated perimeter programs.

Research of this kind is an extremely positive development, and we may expect that pluridisciplinary, analytical work of this kind will be encouraged by INRAN's director. It will also be necessary for technical assistance planned for the project to reinforce this approach to agronomic research.

### 7.2 - Autonomy of Action

While part of the Ministry of Agriculture, INRAN is an autonomous research institute. As such, the Institute's director has the power to assign and reassign personnel among INRAN sites within Niger, and in addition, enjoys limited autonomy in the mobilization of funds for program needs. Purchases of equipment and services having a value of less than 1,000,000 CFA francs (equivalent to \$2,825), for example, can be made without approval from the Ministry. Transactions in excess of 1,000,000 francs require Ministerial approval and bids must be let to procure needed goods and services. In practice, INRAN successfully uses the same procedures for competitive bidding as are used by all

government services in Niger, and has demonstrated its capacity to satisfactorily monitor implementation of contracts. INRAN's accounting practices are sound, have recently been reviewed and approved by the USAID project manager and the controller's office, and are subject to continuing oversight by the Director General of the Institute.

### 7.3 - Personnel

A third feature which affects INRAN's capacity to implement applied research programs is the Institute's human resource base. We have seen in Part IV above that the number of bonafide research staff is small. This situation is improving, however, due to current participation of INRAN personnel in university programs in the U.S. and elsewhere. Beginning in 1987, for example, significant reinforcement of INRAN capacity in the area irrigation-related research may be expected. By this time, nine persons who are enrolled in university-level soil sciences courses will return, and may be expected to contribute to applied research on irrigation themes within INRAN's Ecological Research Division.

INRAN seeks to do more than simply increase the number of its more qualified research staff. The quality of education is also very important. To ensure that training programs are adapted to the needs of research in Sahelian Africa, INRAN, with support of the National Cereals Research Project, seeks to have as many participant trainees as possible conduct their Master's or Doctoral level field research in Niger, with supervision from INRAN staff, and in the case of students in American

universities, with periodic support-visits from American faculty. Currently, four students are engaged in some stage of thesis research in Niger with supervision from stateside advisors.

On the basis of information on INRAN personnel currently in advanced training programs, reinforcement of each of the Institute's research divisions will occur during the period 1985-1989 as indicated in Table 4 below.

While institutional support through current training programs will contribute significantly to INRAN's human resource base for agronomic research, the medium-term needs of the Institute are considerable. Table 5 summarizes the estimated needs of the Institute for students having BAC or BEPC-level training during the period 1985/86 to 1989/90. This estimation was prepared in 1985 by INRAN as part of the Structural Readjustment Program on the basis of projected program needs.

In addition, the Institute expects to eventually replace the vast majority of expatriate technical assistance with equivalent level Nigerien personnel. This will entail the acquisition of more than thirty persons with doctoral, masters, and B.S. level training. In the meantime, the development by INRAN of an effective approach to irrigation-related research will depend a great deal on a good mix of technical assistance and INRAN personnel having benefitted from advanced training programs.

To ensure an effective transfer of technologies for the conceptualization, planning, and implementation of research, returnees will require continued, close follow-up and support

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from technical assistance if they are to successfully relate their formal training experience to research realities in Niger.

Table 4  
CURRENT STATUS OF INRAN PERSONNEL IN  
ADVANCED(a) TRAINING PROGRAMS

INRAN Division	Expected Completion Date for Trainees					
	1985	1986	1987	1988	1989	1990
General Directorate	2	1	1	-	-	-
Agricultural Research (12 trainees in U.S.)	-	2	7	-	4	-
Ecological Research (7 trainees in U.S.)	-	1	8	-	-	-
Veterinary/Zootechnical Research	-	-	1	-	-	-
Rural Economy Research	-	1	-	-	2	-
Forestry Research (1 trainee in U.S.)	-	-	4	-	1	-
Orientation as yet unspecified	-	-	1	1	2	7

a

Training equivalent to French Maitrise

Source: INRAN (1986b)

Details of technical assistance-counterpart links in the area of irrigation-related research will of necessity be clarified as the project progresses. Adjustments will certainly be necessary, and lock-step stages should be avoided in project planning. By way of initial orientation, however, it would be useful to have outlines of irrigation-related research agenda provided as part of the project paper. The objectives toward which the agenda would be oriented should be prepared through close cooperation

with INRAN personnel. This tentative planning should give

Table 5

ESTIMATED NEEDS FOR RESEARCH PERSONNEL WITH  
BAC AND BEPC-LEVEL TRAINING FOR THE  
PERIOD 1985/86 - 1989/90

INRAN Division	Training Level	Year					Total
		85/86	86/87	87/88	88/89	89/90	
Gen. Direct.	BAC	-	-	1	-	1	2
	BEPC	-	-	-	-	-	0
Agric. Res.	BAC	14	11	7	4	2	38
	BEPC	-	-	-	-	-	0
Ecol. Res.	BAC	3	2	2	1	-	8
	BEPC	2	3	1	1	-	7
Vet./Zootech.	BAC	4	5	5	1	2	17
	BEPC	4	3	3	2	2	14
Rural Econ.	BAC	3	2	1	-	-	6
	BEPC	-	-	-	-	-	0
Forestry	BAC	-	-	-	-	-	0
	BEPC	2	2	1	1	1	7
Stats./Data Process.	BAC	1	-	-	-	-	1
	BEPC	2	1	-	-	-	3
Totals		35	29	21	10	8	103

Source: INRAN (n.d.)

particular consideration to the Institute's capacity to absorb/implement recommended programs during the first five years of the project, which, in the case of irrigation research, will be an important transition period (from very low to a moderate research capacity).

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#### 7.4.1. Research Infrastructure

The current infrastructural capacity of INRAN for research related to "classic" irrigated perimeter organization is summarized in Table 1. These sites are representative of production conditions on about half of all irrigated land in Niger. In addition to these locations, INRAN has access to five additional locations where a wider variety of irrigation-related research programs are underway or possible. Currently these include Kolo, Lossa, and Tarna. Moreover, two older, long-neglected, and underutilized sites offer considerable promise once they are made operational again. These are Tillabery (where INRAN is currently studying the impact of prolonged irrigation on soil structure and salinity) and Maradi, where one of the oldest irrigation stations in the country is located.

Finally, additional locations for INRAN applied research on irrigated production include sites currently managed by other rural development services (for example, the Office Nationale des Amenagements Hydro-agricoles, or ONAHA), and regional development projects (for example, Maradi, Niamey, Dosso). Taken together, these locations constitute a considerable physical infrastructure available for the development of research on irrigation during the short and medium-terms. Additional details will be required in the project paper on the specific range of research possibilities offered by each location.

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## VIII

### CONCLUSIONS AND RECOMMENDATIONS

During the ten years which have passed since its creation in 1975, INRAN has grown from a fledgling national research institute with fewer than half a dozen Nigerien research staff to an organization where more than 100 Nigerien researchers and support staff and almost 40 expatriate personnel carry on research on a wide variety of production-related topics. During its short lifetime, the Institute has played a key role in helping the Niger government and the country's rural populations to develop productive strategies judged appropriate for the promotion of improved agricultural production in an extremely harsh environment. By any definition, these changes represent real progress, and the staff of INRAN are to be commended for their performance under conditions of research which have often been difficult. On the basis of a brief examination of selected institutional issues, we are of the opinion that INRAN has the capability to implement anticipated applied research programs related to irrigated production in addition to those currently carried out by the Institute in the area of rainfed agriculture, animal production, etc.

There is still a great deal of room for improvement, as we have argued in the remarks above, and it is to these issues that we will now turn our attention. Of necessity, the points considered below do not exhaust the possibilities, and they should be considered as indicative. The depth of analysis which is reflected in the Applied Irrigation Research PID and which can

be expected in the subsequent Project Paper will provide the basis for needed clarification.

### Status\_of\_INRAN\_Researchers

We have attempted to show how the current juridical status of INRAN researchers places them at both an objective and subjective disadvantage vis-a-vis their counterparts at the University of Niamey. We have also tried to show how the current situation of INRAN researchers within the Nigerien civil service does little to reinforce their self-image as scientists/researchers, or their performance within the research enterprise.

The situation does not merit action in the form of a covenant or a condition precedent, but we recommend that some firm assurance be obtained from the government that the status issue will be clarified. The most appropriate approach to this promises to be a dialogue on policy. Thus we recommend further that the project paper team (a) secure detailed, up-to-date information on current developments relative to researcher status, and (b) that possible scenarios be considered for promoting effective policy dialogue on the issue and its potential impact on plans to develop a national capacity for applied agronomic research. Several possibilities for compromise solutions are suggested below.

During a period of fiscal constraint and pressures from donor organizations for the government to reduce recurrent costs, the likelihood of approval for a cost-adding measure as the proposal promises to be, is small. But the potential costs of continued inaction to the development of Niger's national

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agronomic research potential may be considerable in the medium and long run. This is particularly so given the increasing disillusionment by the government and donors with efforts to significantly improve rainfed agricultural productivity in Niger. Clearly, irrigated production is now considered to offer considerable hope for improved food production, but current knowledge about the complex of factors which contribute to success or failure in many forms of irrigated agriculture is poor in the extreme. An understanding of these factors and the potential of irrigation in Niger will require carefully planned and executed research.

Certainly one important requirement for an effective research effort is an organizational structure which supports and encourages careful studies of significant issues.

More concretely, and for purposes of promoting movement on the status issue, it is further recommended that consideration be given to the possibilities for gradual or compromise approaches to status change. If it is determined that current inaction on the proposal is due to fiscal limitations, ways should be sought to effect some improvements without adding a full burden of cost increases. Specifically, changes might be introduced gradually. Alternatively, compromise arrangements might be considered. Improvements might be effected in the area of career advancement for researchers, while concessions in other areas (e.g., allowances) might be partial and/or gradual.

Finally, we should call attention to a comprehensive study of INRAN being planned for September 1986 by the International Service for National Agricultural Research (ISNAR) with financing

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by IBRD. The objective of the study will be to help INRAN develop a long-term national agronomic research program. To do so, the Institute's research activities and management capacity will be examined in detail, and the status issue will most certainly be addressed. Additional scenarios for change may be expected as a result of the study.

Linkages with National Rural  
Development Institutions

INRAN closely resembles other rural development services in Niger in that its operational links with outside structures, even within the same ministry, are highly formalized and infrequent. Effective implementation of applied research programs will require that measures be taken to strengthen these links. caveat is in order, however. While the logic of rural development management may dictate the need for stronger horizontal links between rural development services, other, internal logics (based, for example, on the need to control information, resources, or to ensure autonomy of action space) may resist them. Thus the linkage issue deserves careful study. Efforts to strengthen horizontal--collaborative--linkages should be made only on the basis of a clear understanding that such changes are valued by those who are affected, and that those involved have a clear vision that the benefits of such changes will outweigh the costs (for example, of increased time spent in meetings; less self-directed activity due to the necessity to coordinate with others).

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One approach would entail a judicious increase in the frequency of meetings where relevant rural development services have an opportunity to exchange information, compare objectives and goals, plan, and coordinate. Persons contacted during the study implied that annual planning meetings do not provide sufficient contacts. An altered periodicity of meeting cycles might be considered, but only as fora for effective exchanges and cooperation. Thus, participation of all rural development services at a given level (arrondissement or departement), as is often the case at present, may not be necessary at some meetings. Somewhat less formal working groups might be considered in addition to the annual service meetings.

It is important to note again that the linkage issue does not affect INRAN alone. Effective work by the Institute in areas (irrigated agriculture) which have been considered the reserves of other rural development services (ONAHA, Genie Rurale, etc.) may require extra effort from INRAN to ensure that all relevant services are involved in the planning of research programs, and that provisional feed-back on the results be distributed for evaluation prior to the stage where results are translated into technical brochures for distribution. Given the necessity of an official framework for most effective interservice cooperation, the project paper team should give attention to scenarios for working agreements (conventions) between those services to be involved with INRAN in the implementation of research programs planned for the project.

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Changing Approaches to Agronomic  
Research in Niger

INRAN's approach to agronomic research appears to have changed gradually since the Institute's early years, with greater attention being given to a wider range of issues which make up the reality of agricultural production in Niger. This is a positive, albeit gradual development, and the applied irrigation research project will further contribute to reinforce a trend which has been due in no small part to the impact of training and technical assistance under the National Cereals Research project. While there will always be narrowly defined technical questions to answer, a pluridisciplinary perspective on production and distribution systems is critically needed. It must be emphasized that the above remarks are impressionistic; the degree of change they imply should be verified during preparation of the project paper.

Ongoing support in the form of interdisciplinary (and integrated) technical assistance is needed, but attention must also be given to the content and orientation of training programs to ensure that returning INRAN personnel bring needed skills with them. The idea of arranging for thesis field research in Niger under the National Cereals Research Project is an excellent one, and similar arrangements should be considered in the case of persons being trained for work on irrigation-related research. The medium and long-term benefits from this training strategy will be double. Nigerien students will be challenged to place their university-based training in a practical relation with

research/production realities in Niger. In addition, the

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experience should provide a valuable learning experience for thesis advisors, and enhance their capacity to prepare students from developing countries for useful work once home again.

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APPENDIX A

PERSONS CONTACTED FOR PURPOSES OF THE ANALYSIS

INRAN

- M. Idrissa Soumana, Directeur General
- M. Ouattersa Mamadou, Chef, Division de Recherches Ecologiques
- M. Toukoua Daouda, Chef, Divisions d'Enseignement et Formation and Etudes et Programmes
- M. Ly Samba Abdoulaye, Chef, Division de Recherches en Economie Rurale
- M. Mahamadou Issaka Magga, Chef, Division de Recherches Agricoles
- M. Aboubakar Issa, Chef, Division de Recherches Forestiers
- M. Harouna Abdou, Chef, Service Administratif et Financier
- M. Bounkoulia, Rice specialist

MINISTRY OF PLAN

- M. Alqabit Asadek
- M. Louis Siegel, DEPP

MINISTRY OF AGRICULTURE

- M. Kori Malam Ali, Directeur Adjoint, Direction de la Production Agricole

ONAHA

- M. Idi Mammene, Chef, Division de la Mise en Valeur

USAID

- Mr. Lance Jepson, ADO
- Ms. Lynn Graybeal, Irrigation Officer, ADO
- M. Gaston Kaba, HRDO

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OTHERS

M. Scott Swinton, formerly with the PARA project, Terna  
Niger

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APPENDIX B  
PROMOTION SCHEMA FOR NIGERIAN CIVIL SERVICE SYSTEM

ECHELONNEMENT INDICIAIRE

CATEGORIES	A			B		C		D	
	1	2	3	1	2	1	2	1	2
<u>2<sup>ème</sup> CLASSE</u>									
1 <sup>er</sup> Echelon	375	300	270	250	220	165	150	110	100
2 <sup>ème</sup> Echelon	425	335	300	270	240	175	155	115	105
3 <sup>ème</sup> Echelon	475	370	330	290	260	185	165	120	110
4 <sup>ème</sup> Echelon	525	405	360	310	280	195	175	130	120
=====									
<u>1<sup>ère</sup> CLASSE</u>									
1 <sup>er</sup> Echelon	625	490	420	360	320	220	195	155	140
2 <sup>ème</sup> Echelon	675	525	450	380	340	230	205	165	150
3 <sup>ème</sup> Echelon	725	560	480	400	360	240	215	175	160
=====									
<u>CLASSE PRINCIPALE</u>									
1 <sup>er</sup> Echelon	850	645	540	460	400	270	235	196	180
2 <sup>ème</sup> Echelon	900	680	570	480	420	280	245	205	190
3 <sup>ème</sup> Echelon	950	715	600	500	440	290	255	215	200
=====									
<u>CLASSE EXCEPTIONNELLE</u> (Echelon unique)	1000	750	645	520	460	300	265	230	210

NOTE : la 2<sup>ème</sup> Classe correspond au grade initial (début de carrière) ;  
la 1<sup>ère</sup> Classe au grade intermédiaire et la classe principale  
au grade terminal.

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APPENDIX C

QUALIFICATIONS OF INRAN PERSONNEL IN  
MAJOR ADMINISTRATIVE POSITIONS

Position	Qualifications
Director General (Idrissa Soumana)	Maitre Assistant 3rd cycle doctoral degree in Plant and Soil Sciences
Chief, Agricultural Research Division (Mahamadou I. Maga)	A1 Ingénieur en Agronomie
Chief, Ecological Research Division (Ouattara Mamadou)	A1 M.S. in Soil Sciences
Chief, Veterinary and Zootechnical Research Division (Tahirou Abdou)	A1 Docteur Veterinaire
Chief, Rural Economy Research Division (Ly Samba Abdoulaye)	A1 Ingénieur en Agronomie
Chief, Forestry Research Division (Aboubacar Issa)	A1 Ingénieur, Eau et Forêt
Chief, Statistics and Data Processing Division (Adnan Abdoulaye)	A1 M.S. in statistics

Source: INRAN (1986a)

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App 12A-1, Chp 12, HB 3  
(TM 3:43) 9-30-82

CLASSIFICATION  
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE Niger Cereals Research			2. PROJECT NUMBER 683-0225	3. MISSION/AID/W OFFICE USAID/Niger
4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with NL: each FY) 683-85-02				
<input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION				
5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	
A. Firm PRO-AG or Equivalent FY <u>82</u>	B. Final Obligation Expected FY <u>85</u>	C. Final Input Delivery FY <u>89</u>	A. Total \$ <u>13,373,000</u>	7. PERIOD COVERED BY EVALUATION
			B. U.S. \$ <u>11,600,000</u>	From (month/yr.) <u>July 1982</u>
				To (month/yr.) <u>June 1985</u>
				Date of Evaluation Review <u>September 1985</u>

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

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., telegram, SPAR, PID, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Recruit a new chief of party.	Purdue/INRAN	Nov. 1985
2. Recruit a second agronomist for the technical assistance team.	Purdue/INRAN	March 1986
3. Recruit an accountant/office manager.	Purdue/INRAN	Dec. 1985
4. INRAN will submit to USAID a plan for additional long-term participant training and short term training.	INRAN	Jan. 1986
5. INRAN will establish a committee to examine financial problems and the committee will present their recommendations at the next semi-annual project review.	INRAN	Jan. 1986
6. Assure that research associates will be provided with housing, logistical support and technical oversight before arrival in Niger.	Purdue/INRAN	Ongoing

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Financial Plan	<input checked="" type="checkbox"/> PID/T	_____
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PID/C	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Project Agreement	<input checked="" type="checkbox"/> PID/P	_____

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

A.	<input checked="" type="checkbox"/> Continue Project Without Change
B.	<input type="checkbox"/> Change Project Design and/or
	<input type="checkbox"/> Change Implementation Plan
C.	<input type="checkbox"/> Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER BANKING PARTICIPANTS AS APPROPRIATE (Name and Title)

Charles Morgan, Project Officer  
Idrissa Soumana, Director, INRAN  
Salifou Elh. Mahamane, Coordinstor

12. Mission/AID/W Office Director Approval

Signature *Peter Benedict*

Typed Name  
Director, Peter Benedict

Date  
11/21/85

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ACTIONS TAKEN ON RECOMMENDATIONS MADE IN MID-TERM  
EVALUATION OF THE NIGER CEREALS RESEARCH PROJECT  
(683-0225)

INRAN and Purdue University have acted in a timely manner on all recommendations made in the June 1985 Mid-Term Evaluation which were accepted by USAID, INRAN and Purdue.

A new Chief of Party has been appointed. An Accountant/Office Manager has been recruited. A second Agronomist has been recruited. However, after agreeing to accept the position, the candidate reversed his decision. Purdue is recruiting another candidate.

INRAN has submitted to USAID a plan for additional long- and short-term training; five additional participants have been named for PhD studies. A number of short-term participants have already returned from courses/seminars.

INRAN has established a committee to examine financial problems. INRAN and Purdue have worked closely with the USAID Controller Office to satisfactorily resolve accounting problems at the Tarna Research Station in Maradi and at project headquarters in Niamey. The committee has programmed some \$ 1.4 million for advanced degree training; these funds were made available to the project by the renegotiation of the Purdue contract.