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UNITED REPUBLIC OF CAMEROON

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GENERAL DELEGATION FOR SCIENTIFIC AND
TECHNICAL RESEARCH
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INSTITUTE OF AGRONOMIC RESEARCH
I R A

National Cereals Research
and Extension Project
N C R E

QUARTERLY PROGRESS REPORT
JULY - SEPTEMBER 1983

UNITED STATES
AGENCY FOR INTERNATIONAL
DEVELOPMENT
USAID

INTERNATIONAL
INSTITUTE OF TROPICAL
AGRICULTURE
IITA



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I - SUMMARY DESCRIPTION OF N.C.R.E. ACTIVITIES

The third quarter of 1983 was a particularly busy one for the National Cereals Research and Extension (NCRE) Project. This was mainly due to the various preparations to be made for the USAID mid-term evaluation of NCRE and the IITA Quinquennial Review (NCRE was one of the few "outreach" projects chosen by IITA for the Review).

Chief among these tasks was the production of the definitive versions of three major project reports as well as the creation of a new expanded briefing paper on the NCRE.

The USAID mid-term evaluation of NCRE began on August 27 with the arrival in Cameroon of two outside consultants: Dr. Elvin Frolick, Agricultural Research Expert and formerly Dean, College of Agriculture, University of Nebraska, Lincoln; and Dr. George B. Alcorn, Agricultural Extension Expert, formerly Director of the Cooperative Extension Service, University of California, Berkeley. The consultants met with all the NCRE team members and visited most of the NCRE research sites throughout the country. They were accompanied during the entire tour by the Project Manager, Dr. Abdel Moustafa and the Chief of Party, Dr. E. A. Atayi. The final evaluation report will be presented on October 11.

The IITA Quinquennial Review (QQR) Team to Cameroon visited from September 16 through 21. The External Review Team was composed of Dr. Louiz-Crouch, Management Officer from the Dominican Republic, Dr. James M. Teri, Cassava Breeder from Tanzania, Dr. Patricia Roberts-Pichette from the TAC Secretariat in Rome, Dr. W. Coffman, Rice Breeder from Cornell University in the United States and Dr. Edgard Normanha, Cassava Breeder from Brazil. They were accompanied throughout their tour by Dr. Eugene R. Terry, Director of IITA International Programs and Dr. Kaung Zan, IRRI Liaison Researcher at IITA. The team was only able to visit NCRE research sites in the West and North West Provinces. Besides meeting with NCRE team members, they had discussions with USAID and National officials.

In preparations for the above-mentioned visits, the entire NCRE International staff and the National Coordinator met in Douala from August 16 to 17.

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From August 2 to 6, at the request of USAID, Dr. Jay Chung, NCRE Maize Breeder, accompanied a USAID Team to Equatorial Guinea to assess the constraints to maize production in that country and make recommendations to the team.

Finally this trimester saw the return of two NCRE counterparts from training abroad. Dr. Charles Thé returned with a doctorate degree in maize breeding from North Dakota State University and has been posted to Nkolbisson as the counterpart of Dr. Jay Chung. Mr. Julius Takow completed a master of science degree in rice agronomy at Louisiana State University. He has been posted to Dschang as Dr. Roy's counterpart. These two additions to the NCRE team will certainly alleviate some of our manpower problems.

The major activities for the next three months will be :

- harvesting of second season crops
- analyses of data and writing of the Annual Report and Work plans
- preparations for the 1984 IRA Cereals Program Planning Meeting.

The following pages show separately the major activities of each of the components of the NCRE project during the third quarter of 1983 :

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II - MAIZE RESEARCH UNIT

In this quarter the maize research unit was involved in the observation, data taking and harvesting of the first season maize trials throughout the country. In addition the second season trials were planted in the Center and Eastern Provinces during this quarter. Many visitors viewed our trials, including several maize scientists from IITA, USAID Mission Officers, the USAID evaluation team and the IITA Quinquennial Review Team.

A. MAIN ACHIEVEMENTS

- Data were collected from all National Variety Trials and Experimental Variety Trials in the Lowland Rain Forest as well as the West and North-West Mid-Altitude zones.
- An evaluation of the three Progeny Testing Trials at Babungo and Ekona was completed.
- First cycle Foundation Seeds of the Varieties Shaba 1, Tlaltizapan 7844 SR and Kasai 1 were developed. Superior individual ears have been selected (Nucleus Seed) for the next cycle of Foundation Seed.
- The harvesting and post harvesting operations for the lowland and high-land Gene Pools were completed.
- The lowland Gene Pool was planted for second cycle recombination.
- Planting of the second cropping season maize variety trials at Bertoua was completed.
- Seed multiplication plots for the varieties TZESR, Suwan 1 and Gusau TZB have been planted in Yaounde
- Presentations of maize research work were given to the USAID evaluation team and the IITA Quinquennial Review team.
- Intensive training in research management and agronomy field research has been given to the cereals agronomist's new counterpart.

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- A great deal of time and effort was spent for the management of 14 maize agronomy trials and 12 maize improvement trials established in North Cameroon in the area of South Banoue.
- The maize unit supervised the rice trials established at Karewa.
- Eighteen agronomy field experiments planted last April in South Cameroon at Ekona, Njombe, Ntui and Bertoua were harvested.
- Four new agronomy trials at Ntui were planted for the second season.

B. MAJOR PROBLEMS ENCOUNTERED

- Continuous heavy rainfall in South Western Province at harvest time.
- Lack of post harvest operation facilities including a seed dryer and seed preparation room.
- Lack of technicians and labor in most of the research sites continues to be a major constraint.
- Car breakdowns are also a major concern.

C. FOLLOW - UP ACTIVITIES

- Data taking and harvesting of the trials in the savannah zone.
- Maintenance, data taking and harvesting of the second cropping season trials in Bertoua and Yaounde.
- Harvesting and seed preparation of lowland Gene Pool.
- Harvesting and post harvesting operations of seed multiplication plots of varieties TZESR, Suwan 1 and Gusau TZB.
- Data analyses of all the trials.
- Harvesting of the maize agronomy and improvement trials established in North Cameroon.
- Management of the maize agronomy trials established at Ntui.

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- Assistance to sorghum and millet unit in harvesting sorghum trials.
- Commencement of data processing of harvested experiments.
- Planning for next year's cereals agronomy trials.
- Planting of maize off-season trials at Karewa.
- Preparation for the "field day" at IRA-Nord Maroua Center on October 5, 1983.
- Assistance to IRA in organizing the new Station at Garoua.

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III - RICE RESEARCH UNIT

During the 3rd quarter, the unit completed the harvesting of all varietal improvement and agronomic trials under irrigated and upland conditions of the first season. The harvested materials and data are being processed.

All varietal improvement trials and most agronomic trials under irrigated and upland conditions for the second season have been planted at the different sites. Cultural practices for the different experiments have been carried out. Collection of field data and observations are now in progress.

A. MAIN ACHIEVEMENTS

Major activities during this period were as follows :

- Harvesting of all first season trials - irrigated and upland - and post harvest operations.
- Land preparation, fertilization, seeding and cultural management of upland agronomic trials at Mbo Plain.
- Land preparation, seeding of nurseries, fertilization, transplanting and cultural management of all irrigated trials at Mbo Plain, Ndop Plain, Baigom, Ntui and Tingo.
- Fertilizer, weeds and insect-pest management of upland and irrigated trials at all sites.
- Observations and collection of field data for upland and irrigated trials at all sites.
- Processing, compilation and analysis of field and harvest data of 1983 first season trials.
- Participation in the USAID evaluation of NCRE.

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- Participation in the Second TAC Quinquennial Review of IITA.
- Continued on-the-job training of IRA technicians and field assistants attached to the NCRE rice team.

TRIALS CONDUCTED IN THE FIRST SEASON OF 1983 - MBO PLAIN

IRRIGATED (Harvested)

- Advanced Yield Trial - Very Early duration
- Advanced Yield Trial - Early duration
- Advanced Yield Trial - Medium duration.

UPLAND (Harvested)

- Advanced Yield Trial - Early duration
- Observation Yield Trial.

TRIALS PLANTED FOR SECOND SEASON, 1983 DURING THE THIRD QUARTER

MBO PLAIN (Upland)

- All varietal improvement trials planted as reported in the second quarterly report.
- Study on subtractive fertility treatment effects on the grain yield of upland rice (new land).
- Study on subtractive fertility treatment effects on the grain yield of upland rice (exhausted land).
- Study on Nitrogen x Phosphorus interaction effects on the grain yield of upland rice.
- Nitrogen response in upland rice in a newly cleared area.
- Effects of P-banding on P-uptake and grain yield of upland rice.
- Response to P-sources at different rates of P application of upland rice.
- Micronutrient response in upland rice.
- Varietal evaluation (adaptability study) in sweet potatoes at Mbo Plain.

MBD PLAIN (Irrigated)

- International Rice Observational Nursery
- International Rice Cold Tolerance Nursery
- Observational Yield Nursery - Early
- Observational Yield Trial - Medium
- Advanced Yield Trial - Early
- Advanced Yield Trial - Medium
- Elite Varietal Trial
- International Rice Yield Nursery
- Moist zone short duration trial (WARDA)
- Initial Evaluation Trial (WARDA)
- Nitrogen response in irrigated rice
- A comparison between urea and sulfate of ammonia as sources of N for irrigated rice.
- Use of Azolla in irrigated rice culture
- Weeds and weed management in irrigated rice
- Direct-seeding vs. transplanting in irrigated rice.

NDOP PLAIN (Irrigated)

- International Rice Observational Nursery
- Observational Nursery
- Observational Yield Trial
- Preliminary Yield Trial
- Advanced Yield Trial
- Elite Varietal Trial
- International Rice Yield Nursery - Medium
- Date of planting, five elite selections
- Date of planting, 14 advanced selections
- Nitrogen response in irrigated rice
- Comparison between urea and sulfate of ammonia as sources of N for irrigated rice
- Comparison among urea supergranules, sulfur coated urea and prilled urea as sources of N for irrigated rice
- Evaluation of three phosphate sources for irrigated rice.

- Study on variety x plant density x fertilizer interaction in irrigated rice
- Study on seedling age effects on the grain yields of short and long-duration varieties
- Long-term NPK fertility trial
- Use of Azolla in irrigated rice culture
- Green manuring irrigated rice with Sesbania
- Weeds and weed management in irrigated rice
- Direct-seeding vs. transplanting in irrigated rice.

B A I G O M (Irrigated)

- Observational Yield Trial
- Varietal Yield Trial

N T U I (Irrigated)

- Varietal Yield Trial

T I N C O (Irrigated)

- Varietal Yield Trial

B. MAJOR PROBLEMS ENCOUNTERED

- Inadequate support staff at Mbo and Ndop Plains affects management of trials.
- Continuous breakdown of vehicles, despite repairs and regular maintenance.

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C. FOLLOW - UP ACTIVITIES

During the next three months, the following activities will be performed :

- Land preparation, transplanting and cultural operations for the late-planted second season trials (October planting).
- Fertilizers, weeds, insect-pests and water management in upland and irrigated trials at Mbo Plain and Ndop Plain.
- Collection and analysis of soil and plant samples from various agronomic trial sites as back-up information on soil nutritional problems of rice.
- Observations and collection of field data for upland and irrigated trials at all experimental sites.
- Harvesting and collection of harvest data for early-planted trials at Ndop and Mbo Plains.
- Post harvest operations processing, compilation and analysis of field and harvest data.
- Preparation of 1984 dry season work plans for Mbo and Ndop Plains.
- Preparation of 1983 Annual Report and IRA Cereals Program Planning Meeting presentation.
- Continue on-the-job training of national counterparts, technicians and field assistants in rice research activities.

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TRIALS TO BE PLANTED DURING THE 4TH QUARTER, 1983

MBD PLAIN (Irrigated)

- Nitrogen x Phosphorus interaction effects on the yield of irrigated rice.
- A comparison between sulfur-coated urea and urea supergranules with prilled urea as sources of N for irrigated rice.
- Evaluation of different phosphatic fertilizers in irrigated rice culture.
- Variety x plant density x fertilizer interaction effect on the grain yield of irrigated rice.
- Long-term study on the effect of phosphate rates and frequency of phosphate application on the yield of irrigated rice.

MBD PLAIN (Upland)

- Planting of maize, cowpea, soybean and groundnut as rotational crops in the second season.

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IV - SORGHUM AND MILLET UNIT

A. MAIN ACHIEVEMENTS

During the third quarter, the sorghum and millet research unit was involved in the following major activities :

- Planting of various sorghum and millet experiments for rainy season at various locations as proposed in the NCRE 1983 Work Plan.
- The labelling of experiments and all the cultural operations (thinning, weeding, fertilizer application, etc.) were also completed at all locations.
- Observation and data collection of various experiments of the sorghum and millet breeding program are in progress at all locations.
- The selection and hybridization program in both crops are in progress during the crop season.
- Crossing program in sorghum by hand emasculation and pollination is in progress as per the NCRE 1983 Work Plan.
- Maintenance of sorghum and millet advanced lines through self pollinating bags is in progress during the crop season.
- Breeder seed increase of some promising selections of sorghum is in progress.
- Planting of dry season sorghum (muskwari) nurseries for dry season sorghum experiments is taking place.
- On-the-job training of technicians and field assistants in the plant breeding aspects of sorghum and millet crops continues.

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B. MAJOR PROBLEMS ENCOUNTERED

- Lack of support staff is the major problem faced by the sorghum and millet unit.
- A long period of no rainfall after mid-September created moisture stress problem which affected the seed formation of late varieties involved in the crossing program.

C. FOLLOW - UP ACTIVITIES

The sorghum and millet research unit intends to be involved in the following activities in the next three months :

- Harvesting of all sorghum and millet experiments of the rainy season at various locations and recording of all observations and data desired at harvest.
- Threshing of all rainy season sorghum and millet experiments and recording of all observations and data desired.
- Continuation of crossing program with late maturing varieties.
- Processing and compilation of data will be done for rainy season sorghum and millet experiments.
- Statistical analysis will be performed for various sorghum and millet experiments.
- Transplanting of dry season sorghum (muskwari) at IRA, Salak station for different experiments.
- Planting of sorghum in irrigated conditions at SEMRY, Maga and Agri-Lagdo, Karewa locations for seed increase.
- Planting of some promising lines and local varieties at Guiring research stations under irrigated condition to complete the remaining crossing program proposed in the 1983 Work Plan.
- Continuing on-the-job training of technicians and field assistant in plant breeding aspects of sorghum and millet crops.

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V - TESTING AND LIAISON UNIT (TLU)

A. MAIN ACHIEVEMENTS

During the third quarter, the TLU was involved in the following major activities :

- On-farm Rice Trials : Three (3) on-farm irrigated trials in the Menchum Valley of the North West Province were transplanted (9 varieties x 3 replications); and later side-dressed with urea and muriate of potash. Two (2) on-farm upland rice trials (one in the West and one in the North West) were seeded, and, again, later sidedressed.

- On-farm Maize Demonstrations and Trials : Eighteen single replication, on-farm maize demonstrations/trials were harvested in the North West, South West and West Provinces at the following locations :

North West Province

Bali	Babungo (2)	Nkwen
Obang	Ndop	Mbengwi
Befang	Bambui (2)	

West Province

Fokamozo	Bameka	Bacheopi
Bafou	Noun	Bagam

South West Province

Barombi-Kang	Ekona	
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Prior to harvesting, disease scoring and scoring for husk tip covering was performed. Preliminary analysis of the results is underway, although there remains three high altitude and/or late-planted maize demonstrations/trials to be harvested.

Four maize fertilizer response trials and one maize variety trial were harvested at Trial and Demonstration Centers (TDC's) for MIDENO (the North West Development Authority) at Nkwen and Mbengwi. Another maize variety trial remains to be harvested at the TDC in Santa. Preliminary analysis of the results for the fertilizer response trials at three very disparate locations indicate that splitting the fertilizer application (as opposed to applying it all in a single application) has no significant effect on maize yields.

- On-farm Maize Demonstration Minikits : The TLU has begun receiving completed observation forms from MINAGRI field demonstrators in the North West and South West Provinces who had set out maize minikit demonstrations on farmers' fields. So far, twenty have been received. Over 150 minikits were distributed by the TLU. In almost all cases, the introduced ("improved") varieties of maize are out-yielding the local variety (in independent tests by the TLU the measuring stick method of estimating yields that is being used by the "minikits" implementers was found to have an average absolute error of 17%) and are preferred by the farmer.

- Agro-socio-economic Surveys :

- North West Province : Analysis of the results of the agro-socio-economic survey of farmers in the North West Province was completed during the 2nd quarter, followed by a preliminary write-up of the results in French. The French version is still undergoing revision, but the English report of the results is out. The results confirm the generally recognized fact that farming systems in the North West Province are tremendously diverse in terms of cropping patterns. The diversity can be partly explained by the great variation in agro-climatic zones and ethnicity (with differing dietetic preferences) within the province.

- South West Province : Questionnaires are still being received.

- Collaboration with Parastatal and other Organizations : As mentioned in item (2) above (maize demonstrations and trials), the TLU has continued to collaborate closely with MIDENO in the first year's operation of its TDCs. In addition, TLU and IRA have provided lecturers for the three month training course provided by MIDENO for MINAGRI field demonstrators. All six on-farm maize trials conducted in collaboration with UCCAO in the West Province have been harvested. Results from WADA and the Credit Union Project concerning their own on-farm maize trials are still forthcoming.

B. MAJOR PROBLEMS ENCOUNTERED

- Manpower shortage : The TLU has suffered from an acute and increasing shortage of manpower at the technician and higher levels. Two of the three agricultural technicians are in Mexico (at CIMMYT) for six months (since May) for a training course. In August, one of the counterparts (Mr. Samatana) was called away for a month of military service, which was followed by his annual leave. In September, Mr. Meppe (an Ingénieur des Travaux) departed to IITA for a three month training course.

- Lack of mobility during the Maize Harvest Period : Excessive maintenance requirements of the project vehicles made them virtually unavailable to the TLU for almost a month.

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C. FOLLOW - UP ACTIVITIES

- On-farm Maize Demonstrations and Trials : A few of these remain to be harvested. The next three months will be devoted to the analysis of the results of the trials (both biological and economic) and the design of next year's on-farm maize research program, with special emphasis on collaborative research efforts with other organizations.

 - On-farm Rice Trials : The rice trials (5) will still be in the field throughout most of the 4th quarter. The TLU will carry out the necessary observations, harvest and analyze the results.

 - S u r v e y : With the general agro-socio-economic survey of farmers in the North West out of the way, the TLU will turn its attention to analyzing the information coming in from the South West Province survey. So far only a handful of completed questionnaires have been received. In addition, the TLU researchers (including counterparts) will begin designing a more in depth agro-economic survey of farmers in the North West and West to gain a more detailed description of farmer's circumstances, farming practices, constraints and goals. Separate surveys are envisaged for rice and maize farmers. The survey will be implemented by the TLU personnel beginning in the 4th quarter.
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VI - A D M I N I S T R A T I O N

During the third quarter of 1983, project management has improved significantly. For example, a tighter financial control has been made possible for the first time by a "unit budgeting" process wherein expenditures of each project component (administration, maize, rice, sorghum and millet, and the TLU) are monitored individually. Inventory control has also been tightened and is being maintained by more systematic record keeping.

The Administrator travelled to Garoua and Maroua July 18 - 26 to discuss various matters "on-site" with Drs. Talleyrand and Dangi as well as the Chief of Center, IRA Maroua. Visits to trials included a trip to SEMRY II at Maga.

The upkeep of the NCRE vehicles and the installation of the "IRA branch" of the USAID radio network received particular attention during this period. Matt McKay of the NCLD spent two days on a consultancy basis diagnosing maintenance needs for five of the NCRE's twelve vehicles in southern Cameroon. He also provided invaluable help with parts orders and has promised to provide the NCRE with recommended spare parts stock lists for both the AMC and Chevrolet vehicles. Three of the six radios to be installed at IRA Stations were operating by September 30 (at Nkolbisson, Ekona and Njombe).

THE NCRE INTERNATIONAL STAFF AND COUNTERPARTS AS OF SEPTEMBER 30, 1983

I. International Staff :

<u>N A M E</u>	<u>P O S I T I O N</u>	<u>LOCATION, IRA</u>	<u>NATIONALITY</u>
Dr. Emmanuel A. Atayi	Chief of Party	Nkolbisson	Togolese
Mr. Toby Chamberlain	Administrator	Nkolbisson	American
Dr. Jay Chung	Maize Breeder	Nkolbisson	American
Dr. Animesh C. Roy	Rice Agronomist	Dschang	Bangladesh
Dr. D. Janakiram	Rice Breeder	Dschang	Sri Lankan
Dr. Henri Talleyrand	Cereals Agronomist	Garoua	American
Dr. Om P. Dangi	Sorghum Breeder	Maroua	Indian
Dr. J Kikafunda-Twine	Extension Agronomist	Bambui	Ugandan
Mr. Dermot McHugh	Agricultural Economist	Bambui	American

II. National Counterparts

a) In Country :

<u>N A M E</u>	<u>P O S I T I O N</u>	<u>LOCATION</u>
Dr. Jacob A. Ayuk-Takem	Maize Breeder and Coordinator NCRE	Bambui
Ms. Pauline Zekeng	Extension Agronomist	Bambui
Mr. Marc Samatana	Socio-Economist	Bambui
Mr. Claude Hankam	Plant Pathologist	Bambui
Mr. Jean-Bosco Zangue	Maize Breeder	Nkolbisson
Mr. Titus Nga Ngoumou	Cereals Agronomist	Garoua
Mr. Ezechiel Passam	Administrative Assistant	Nkolbisson
Dr. Charles Thé	Maize Breeder	Nkolbisson
Mr. Julius A. Takow	Rice Agronomist	Dschang

b) In Training :

<u>N A M E</u>	<u>SPECIALIZATION</u>	<u>U S UNIVERSITY</u>
Mr. Clotus Asanga	B.S. Cereals Prod.	Oklahoma State
Mr. Fabien Joutong	M.S. Rice Breeding	Louisiana State
Mr. Edward Ngong-Nassah	M.S. Cereals Prod.	South Dakota State
Mrs. Christie Ngundam	B.S. Cereals Prod.	University of Missouri
Mr. Bernard Soneh	B.S. Cereals Prod.	California State Fresno.