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PROGRESS REPORT 1980-81

and

WORK PLAN 1981-82

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C.O. GWATHMEY

ACPD AGRONOMIST

INSTITUT DE LA RECHERCHE AGRONOMIQUE

B.P. 33, MAROUA

REPUBLIQUE UNIE DU CAMEROUN

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PROGRESS REPORT 1980-81 AND WORK PLAN 1981-82

Introduction

The purposes of this report are to briefly review the main accomplishments of the SAFGRAD Project in Cameroon during the 1980-81 season, to discuss problems which occurred along with recommendations for improvement, and to propose a work plan for the 1981-82 season. As such, it is intended as an administrative and not as a technical report. A separate analytic report of the results of 1980 SAFGRAD/CAMEROON field trials is presently being translated and typed, and should be available shortly in both English and French.

I. PROGRESS REPORT 1980-81

I.1 Summary description of activities

The 1980-81 season represented the second year of implementation of the SAFGRAD Project in Cameroon. The main thrust of the project consisted of a logical continuation and expansion of the field trials begun in 1979. A fourth crop, maize, was added to the three already in trial: sorghum, millet, and cowpeas. The trials remained largely varietal in nature.

For the 1980 season, a total of 24 trials were distributed to 15 sites in Northern Province. The majority of these were conducted outside of research station. The major activities of the two SAFGRAD/CAMEROON agronomists centered around trial design, site selection, preparation, distribution, monitoring, supplying of inputs, data collection, analysis and interpretation of the results of the trials.

Allied activities included designing, implementing, and analyzing consumer preference tests on grain of sorghum and millet varieties.

In addition, varietal maintenance and seed increase developed as important adjuncts to the trials.

Liaison of SAFGRAD research with extension was initiated in 1980 by means of collaborative trials implemented through Ministry of Agriculture institutions, and through the principal development corporation, SODECOTON. In addition, field visits to SAFGRAD trials at the principal research station, IRA-Guiring, brought a number of extension and seed multiplication officials into contact with SAFGRAD research activity. SAFGRAD/CAMEROON also hosted groups of visiting scientists from SAFGRAD headquarters in Upper Volta and from various national programs of other member countries.

Much of the 1980-81 dry season was devoted to statistical analysis and interpretation of data resulting from the 1980 trials, and to the preparation of an analytic report of the results. Preliminary results were presented at annual OAU/STRC technical workshops in Ibadan, Nigeria (maize and cowpeas) and Gaborone, Botswana (sorghum and millet), each of which was attended by one of the SAFGRAD/CAMEROON agronomists. In addition, raw data from the regional trials was returned to appropriate SAFGRAD trial coordinators in Upper Volta for regional analysis and interpretations.

## I.2 Review of trial objectives and strategy

The long-term objective of the trials is to identify varieties of each SAFGRAD crop which are sufficiently promising, stable, and interesting to farmers that they may be recommended for multiplication and extension in Northern Cameroon. The general strategy involves a series of systematic screenings for varietal adaptation, yield potential, and farmer/consumer preference over the course of several seasons.

The screening process is divided into several steps, each designed

to eliminate from active testing the less desirable material:

1. Regional Variety Trials, designed to introduce and test the basic adaptation of experimental/improved varieties originating from the regional institutes (ICRISAT, IITA, etc.) and from national breeding programs of other SAFGRAD countries.
2. Advanced Trials, designed to test for agronomic requirements and range of adaptation of the most promising varieties coming out of the regional trials.
3. Pre-extension Trials, designed to compare the most promising varieties under typical farm conditions.
4. Consumer Preference Tests, designed to screen the introductions for such characteristics as preparation and taste properties, marketability, and milling properties.

In addition to this general screening process, other regional trials may be established in station to help resolve certain crop-specific questions. Examples from the 1980 season include the cowpea planting date and entomological trials.

### I.3 Main accomplishments

#### I.3.1 Varietal introduction and advancement

A total of 66 new varieties were introduced to Northern Cameroon in 1980, bringing the total number of SAFGRAD introductions to Cameroon since 1979 to 114. Of the 48 previous introductions, 18 were advanced to off-station trials in 1980. An additional 8 varieties from the 1980 regional trials have been identified to advance in the 1981 season.

The breakdown of varietal introductions by year and by crop is presented in Table 1.

#### I.3.2 Field Trials

For the 1980 season, 24 trials were distributed to 15 different

test sites in Northern Province. Of these, 11 were regional variety trials, 6 were advanced trials, 4 were pre-extension trials, and 2 were other regional trials. Ten of the trials were conducted in research station and the remainder off-station. Table 2 summarizes the number of trials and sites by crop.

Of the 24 trials distributed, 21 returned useful data to SAFGRAD/CAMEROON.

Table 1: Varietal introduction, testing, and advancement by year and crop.

Crop	Year	Number of new introductions	Number of varieties tested*	Number of varieties advanced
Maize	1979	0	0	0
	1980	30	32	2
Cowpea	1979	28	30	7
	1980	16	32	3
Sorghum	1979	12	14	7
	1980	14	25	2
Millet	1979	8	9	4
	1980	6	12	1
Total	1979	48	53	18
	1980	66	101	8

\* including local check varieties.

Table 2: Number of trials and sites by crop, 1980.

Crop	Trial Sites	Total Trials	by trial type			
			Regional	Advanced	Pre-ext.	Other Reg.
Maize	7	7	7	0	0	0
Cowpea	(4) <sup>5</sup>	8	2	3	1	2
Sorghum	7	7	2	2	3	0
Millet	2	2	1	1	0	0
Total	20*	24	12	6	4	2

\* of which 15 sites differed.

### 1.3.3 Consumer preference testing

Grain samples of 15 experimental varieties of sorghum and 9 of millet were tested for preparation and taste characteristics during the 1980 season. These tests allowed elimination of two sorghum varieties which had previously been advanced, and relative ranking of the remaining entries.

### 1.3.4 Varietal maintenance and seed increase

Seed increase was accomplished in several ways depending on crop and seed requirements. In 1980, border rows of regional sorghum and millet trials were selfed for one generation by bagging the heads and harvesting them separately. In the case of cowpea, an autogamous crop, a portion of the harvest was cleaned, sorted, and treated as seed.

In the case of 5 sorghum varieties and one of millet, a dry season seed increase was carried out under irrigation at the IRA-Guiring station. These were advanced varieties for which larger quantities of seed were needed.

All seed was cleaned by a project-procured seed cleaner, treated, bagged and labelled. Approximately 60 different varieties are in storage, in quantities ranging between 0.2 and 4 kilos per variety.

### 1.3.5 Data analysis and technical reporting

The results from 22 field trials and taste tests conducted in 1980 were catalogued, statistically analyzed where appropriate, interpreted, and written up in draft form. The resulting analytic report is presently being translated and typed, and is expected to be available shortly.

### 1.3.6 Links to extension

Liaison of SAFGRAD research with extension was accomplished primarily through conducting field trials in collaboration with extension agencies and extension-related projects. These included five advanced trials with the Young Farm Family Training Centers (CFJA (MINAGRI)), four

pre-extension trials with Agricultural Posts (MINAORI), four regional trials with SOLECO/TON (development corporation), and one regional trial with the Integrated Livestock and Agriculture Development Project (USAID).

In addition, field visits were organized for local extension and seed multiplication officials and technicians to see the SAFGRAD trials at IRA-Guiring, at the CFJA at Guetale, and at the Poste Agricole at Mindif.

I.4 Problems and Recommendations

I.4.1 Preparation of regional trials

A number of diverse organizational and technical problems were encountered in the regional trials as prepared by SAFGRAD trial coordinators in Upper Volta. These are enumerated in "Suggestions for Improving the Preparation of SAFGRAD Regional Trials", in appendix.

Recommendations: See appendix.

I.4.2 Quantity versus quality of trials

The 1980-81 trials program demonstrated the tradeoff involved between the quantity of trials conducted and the quality of data returned. Quantity implies not just their number, but the diversity in crops and trial design, and the dispersion of trial sites. As these elements diversify, the chances of procedural errors in trial placement, cultural operations and data collection increase, and the quality of the data suffers accordingly. The problem is related to the capabilities and motivation of the field staff (see section I.4.5), and to the number of field visits by SAFGRAD/CAMEROON researchers to monitor the trials.

In 1980, the quality of data was less than ideal from eight trials at six sites. Fortunately, in most cases secondary data was involved and the trials remained useful and interpretable. But given current staffing on the research, support, and field levels, the 1980-81 trials

program would appear to be close to the point of diminishing returns in the quality/quantity equation.

Recommendations:

1. That the number of trials and sites not appreciably exceed the 1980-81 level unless project staffing increases.
2. That the Cameroonian SAFGRAD agronomist be provided with independent means of transportation to more efficiently monitor the trials. (See section I.h.6.)
3. That an annual SAFGRAD/CAMEROON training workshop be initiated to (re-)train field staff in trial techniques. (see section I.h.5)

I.h.3 Data processing

Data from the 1980 trials was processed and statistically analyzed using hand-held calculators. This proved to be very time consuming, conducive to errors, and an inefficient use of researchers' time. A borrowed programmable calculator (TI-58C) also displayed serious shortcomings in the limitations of its library programs and in the number of data registers. The time required for data processing considerably delayed completion of the analytic report.

Recommendations:

1. That the project purchase a small computer of the Apple type for data analysis and storage, including a Fortran interface and program library in order to profit from the large number of Fortran library programs available for statistical analysis.
2. That IRA recruit and assign a trained computer operator / data processor to operate this equipment at IRA-Nord, Maroua, so that all IRA-Nord researchers including SAFGRAD could efficiently avail themselves of this equipment.

#### I.4.4 Support staff

The relative lack of support staff at IRA-Nord has obliged the SAFGRAD/CAMEROON researchers to devote excessive project time to routine tasks of typing, mimeographing, procurement of small material, and running messages. The secretarial staff in particular has diminished since December 1980, such that presently there is one typist of modest capabilities for the entire food crops section of IRA-Nord.

Given the seasonal nature of SAFGRAD/CAMEROON's secretarial needs, the hiring of a full-time secretary for the project alone is difficult to justify. At present, the project is employing an expatriate translator-typist on a part-time basis.

#### Recommendation:

1. In view not only of present needs but also of imminent assignment of additional researchers to IRA-Nord, that IRA recruit, assign and equip qualified secretarial staff for the food crops section. It is suggested that one bilingual secretary be included. A ratio of one secretary-typist for two researchers would be appropriate. For its part, SAFGRAD can reimburse IRA for cost time of secretarial work.

#### I.4.5 Off-station trial implementors

Off-station implementors of SAFGRAD trials have included such cadres as the Chefs de Ferme of the Young Farm Family Training Centers (CFJA), the Chefs de Poste Agricole, and SODECOTON field staff. These cadres are nominated to conduct SAFGRAD trials by their superiors, which poses an additional burden to their heavy work programs, without providing significant tangible rewards. Too often, SAFGRAD trials have had to compete unfavorably for the time of these cadres. Since the area planted to SAFGRAD trials is small in relation to the work entailed, the incentive for conducting a good trial based on the harvest is inadequate.

In addition, these implementors have generally had little or no training in experimental agriculture. Psychic rewards based on interest in crop improvement are generally low. Additional incentives are needed.

Recommendations:

1. That an annual training workshop be conducted by SAFGRAD/CAMEROON at IRA-Nord, to generate interest in crop improvement and to develop skills in field plot technique. These workshops could also include IRA station field staff.
2. That a system of monetary bonuses be initiated to reward off-station implementors for properly conducted trials.

I.4.6 Counterpart transportation

Efforts to provide the Cameroonian agronomist with independent means of transportation have not yet succeeded. The 1975 Toyota Land Cruiser (previously purchased and used by the predecessor project, JP 26) has been transferred in title to IRA for this purpose. Although the vehicle appears potentially serviceable, it is not running due to an alleged fuel system problem. Its repair has proven difficult due to the inaccessibility of parts for this model. The needed carburetor parts are not in stock at the nearest Toyota dealership in Yaounde, and competent mechanical talent is difficult to find in Maroua.

Recommendations:

1. That the USAID garage in Maroua be authorized to attempt diagnosing the problem and advise on repair.
2. In the event the vehicle is not repairable, that additional project funding be provided to purchase serviceable transportation for the Cameroonian agronomist.

I.4.7 Complementary researchers

The lack of researchers of complementary disciplines has handicapped to a certain extent the exploitation and usefulness of the trials.

For instance, many of the introduced varieties are more useful as breeding material than for direct use as varieties for extension. Yet there are at present no breeders assigned to the food crops section of IRA-Nord. Similarly, evaluation of the entries in the regional trials would also be enhanced were there an entomologist and a pathologist on the staff. These problems are expected to be alleviated to some extent with the implementation of the NCRE and CRSP projects by the 1982 season.

Recommendation:

1. That selected SAFGRAD regional research specialists plan to make 5-day working visits during the 1981 season to assist SAFGRAD/CAMEROON in evaluating entries of the regional, advanced, and pre-extension trials.

I.h.8 Identification and nomination of trainees

Although IRA and DGRST officials have been advised by the OAU/STRC and by SAFGRAD/CAMEROON of the availability of SAFGRAD scholarships and grants for advanced training of researchers, no candidates have yet been named. The problem appears to center around the relative scarcity of potential candidates graduating annually from the Ecole National des Sciences Agricoles on the one hand, and competition with other projects for counterparts and grant recipients on the other.

The SAFGRAD/CAMEROON counterpart, Mr. Fobasso, has been mentioned in this regard, but in order that he leave his post for advanced training, another Cameroonian research agronomist would need to be named to fill his position during his absence.

Recommendation:

1. That the OAU/STRC International Coordinator renew his request for nomination of qualified candidates with IRA and DGRST.

## II. WORK PLAN 1981-82

### II.1 Trial objectives and strategy

For the 1981-82 season, no changes in overall objectives and strategy are envisaged. The screening process described in section I.2 is expected to continue to advance the most promising varieties towards eventual recommendation for release, multiplication, and extension.

In an effort to concentrate efforts on advancing the screening process and to limit the number of trials per section I.4.2, supplementary regional trials are to be curtailed. Greater emphasis is to be placed on consumer preference testing. Intermediate-cycle sorghum testing is to be discontinued in favor of the short-cycle collection where the greater immediate potential lies.

While design of the regional and pre-extension trials are expected to continue with small refinements, the design of the advanced trials in the Young Farmers' Centers (CFJA) is to be modified considerably. The changes proposed are partially due to the problems mentioned in section I.4.5. The 1981 CFJA - SAFGRAD Collaborative Trials would primarily test the compatibility of introduced, photo-insensitive sorghums and millets with the cultural practices taught in the Centers. The modified design would also have greater demonstration potential and would be more compatible with the curriculum of the Centers. If the interaction of the introduced varieties with the Centers' techniques proves to be positive, then the Centers may eventually develop as an important extension vehicle for the improved varieties.

### II.2 1981-82 Trials Program

For the 1981 season, a total of 30 trials are proposed for 22 different sites. Nine of these are to be conducted in research station and the remainder off-station. Table 3 summarizes the numbers of trials

by site and by crop.

Table 3: Proposed SAFGRAD/CAMEROON trials program, 1981-82

Crop	Number of trials	Number of sites	by trial type		
			Regional	Advanced	Pre-ext.
Maize	7	6	6	0	1
Cowpea	6	4	2	1	3
Sorghum	11	10	1	5	5
Millet	6	6	1	2	3
Total	30	26*	10	8	12

\* of which 22 sites are to differ.

### II.3 Consumer Preference Testing Program

To promote screening of advanced varieties, the consumer preference testing program initiated last season is to be expanded upon in the 1981-82 season. Tests planned include the following:

Maize: milling, marketability, and taste tests.

Cowpeas: marketability and taste tests.

Sorghum: preparation and taste tests.

Millet: preparation and taste tests.

### II.4 Extension/demonstration linkage

Collaboration is expected to continue in 1981-82 with the various extension institutions and projects mentioned in section I.3.6. Collaborative trials are to include 12 pre-extension trials with Agricultural Posts, 5 advanced trials with the Young Farmers' Centers (CFJA), 3 regional trials with SODECOTON, and one advanced trial with the Integrated Livestock and Agriculture Development Project. This last collaborative trial is to include seven sub-sites in farmers' fields.

#### II.5 Coordination with regional SAFGRAD researchers

Active collaboration on regional trials and varieties is anticipated with the following SAFGRAD regional trial coordinators in 1980:

Maize: Dr. V.L. Asnani, IITA/SAFGRAD, Kamboinse, Upper Volta

Cowpeas: Dr. V.D. Aggarwal, IITA/SAFGRAD, Kamboinse, Upper Volta

Sorghum: Dr. C.M. Pattanayak, ICRISAT/PNUD, Kamboinse, Upper Volta  
Dr. K.V. Ramaiah, ICRISAT/PNUD, Kamboinse, Upper Volta

Millet: Dr. B.B. Singh, ICRISAT, Maradi, Niger.

In addition, it is anticipated that selected SAFGRAD regional research specialists will visit the SAFGRAD/CAMEROON trials during the season to assist in evaluating the entries for specialized characteristics.

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