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UNITED STATES GOVERNMENT

# Memorandum

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DATE: June 3, 1975

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FROM : AFR/CWR, John C. McLaughlin

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SUBJECT: Project Paper for North Cameroon Seed Multiplication

Forwarded herewith for your review is a copy of the subject project paper. A meeting of the project committee to consider this paper is proposed for June 10, 1975 at 3:00 P.M. in Room 3524. Your attendance or that of someone from your office will be appreciated.

Attachment: n/a

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# NORTH CAMEROON SEED MULTIPLICATION

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## I. PROJECT SUMMARY AND RECOMMENDATIONS

### A. INTRODUCTION

The triangular area from Garoua to Yagoua to Mora in North Cameroon is heavily populated by small scale farmers largely dependent on small plots of sorghum for food and peanuts for both food and cash. About 85% of the more than 900,000 people within this area derive their living from agriculture and more than 70% of those in agriculture plant sorghum, while a smaller percentage plant peanuts. Peanuts, however, are acquiring increased importance both as a food crop, as a legume valuable in maintaining soil fertility, and as a cash crop.

Although the area is primarily devoted to agriculture, it has faced shortage in cereals during recent years, with the deficit reportedly growing from 10,000 tons in 1971-1972 to 44,000 tons in 1973-1974. While the area is not part of the region most severely affected by the recent Sahelian drought, it does lie within the outer boundaries of this region, and below average rainfall definitely contributed to the above deficits. An excellent 1974-1975 growing season reversed the deficit situation trend for the current year, but such ideal crop conditions cannot be counted upon. The Government of the United Republic of Cameroon, therefore, is engaging itself in a number of programs to increase production, provide for times of shortages, and increase the income of these, some of the poorest, areas of Cameroon.

One of the inputs most crucial to the success of the government programs is seeds of high yielding varieties. Presently, per hectare crop yields are only 35% of what should be attained. Available evidence indicates that germination rates are extremely low, as farmers plant seeds at more than double the rate that should be needed. Further evidence indicates that farmers sold their retained seed supply prior to the 1974 planting season (June) when prices skyrocketed and were then obliged to plant whatever seed could be found. The result is a mixture of varieties of which many are unsuited to the area.

The area does not have a self-sustaining seed multiplication and distribution system, although the Government has been active in establishing the necessary institutional base. Seed breeding and research also has been developed to the point where a seed multiplication and distribution system have become the key restraint overall production. The proposed project would help meet the area's need for seeds and would provide a vital component in the Government's development strategy for the area. With the organizational base already established, it would provide the physical and operational means of ensuring a reliable source of improved sorghum and peanuts seeds adapted to local needs and produced multiplied and marketed under local conditions.

The project, which would produce and distribute at least 1200 tons of seed annually by the end of the project, would include:

- Seed varietal testing
- Multiplication of selected varieties in two stages.
- Necessary ancillary activities such as purification of existing varieties and germination testing.
- Demonstration plots for farmer observation.
- Installation and operation of seed production equipment and facilities at three locations.
- Establishing and operating a distributional network for the seeds, related inputs, pesticides need to protect harvested grains.
- In-service training for the agents manning the distribution system and responsible for assisting the farmers in adopting the new seeds and related improved cultivation and storage practices
- Public relations, i.e., radio and leaflet promotional campaigns, e. . .

Total A.I.D. assistance of \$1,673,000 over the six year life of project would include a three man technical assistance team (with tours staggered so that each man serves four years); seed production equipment and facilities; and training in third countries and in the United States. The contribution of the Government of the United Republic of Cameroon is projected at \$1,428,000 composed of land acquired and made available, facilities, and technicians.

Acceptance of the prevailing opinion of agriculture experts that improved seeds alone mean a % increase in production would mean an internal rate of return to the project of %.

The conformance of the project to A.I.D. and host country development policy and strategy as contained in the Five Year Plan, the DAP, the FBS, and other policy documents as already been spelled out in the Priority and Relevance Section (annex ) of the approved PRP.

### Project Design

A. GOAL: The goal is to increase the quantity and quality of staple cereals in the Sudanian and Sahelian climatic zones of Northern Cameroon, so as to: (1) reduce national income disparities; (2) contribute first to import substitution and eventually to export expansion, (3) alleviate domestic food scarcities, and (4) improve nutrition. The goal is chosen in the context of a situation typified by low per hectare production and shortages requiring recent importation of necessary food grains into the area from other parts of the country and from abroad, combined with the presence of an opportunity to improve the situation.

**B. MEASURE OF GOAL ACHIEVEMENT:** Indicators of goal achievement include per hectare as well as total yields of sorghum and peanuts; incomes of the farmers utilizing the project inputs and practices as compared to the incomes of a control group; quantitative measurements of the flow of cereals and peanuts to the various markets, and reduced insect and disease damage and spoilage of grain; level of imports into the area.

**C. ASSUMPTIONS OF GOAL ACHIEVEMENT:** The achievement of the project goal rests on several important assumptions: (1) that complementary programs will be undertaken successfully to remove constraints lying outside the scope of this project; for example, chemical storage, credit, marketing and transportation constraints (there are ongoing programs in each of these areas); (2) the small holders of the area will take the necessary measures to increase production; (3) the climate and other aspects of the natural environment will prove reasonably hospitable; (4) workable country liaison will be maintained between research and extension; and (5) socio-economic conditions, good prices, and other policies are conducive to increased yields and production;

**D. PURPOSE:** The purpose is to establish and institutionalize a self-sustaining regional system for production; distribution and use of improved peanuts and sorghum seed in Northern Cameroon in order to meet the needs for improved seed of up to 275,000 farmers planting up to 430,000 hectares of sorghum and up to 150,000 farmers planting up to 73,000 hectares of peanuts. The selection of this purpose is made with a view to removing the gap that now exists between research; which is providing improved varieties at one end of the food production spectrum, and activities now underway to improve marketing conditions and expand the supply of various other inputs at the other end of the spectrum.

**E. END OF PROJECT STATUS:** Achievement of the project purpose should be reflected at the time of the project's completion in: (1) improved varieties of seed on a continuing basis at the Maroua Agricultural Center and Multiplied on a continuing basis at several other centers and by the farmers of the project area; (2) use of all the improved seeds that are produced, along with the accompanying inputs by the farmers of the project area; (3) while the Maroua Center will need continued outside financial support, the multiplication and distribution of the seeds and the importation and distribution of the other inputs such as the insecticides will be fully paid for by the user farmers of the project area, and operated on a continuing basis by the above apparatus (4) continued assistance to farmers with respect to identification and control of insects and pathogens attacking the crops by the Government, through an apparatus comprising the agents of SODECOTON, the extension service, the Ministry of Agriculture, and the Mission to develop Food Crops (MIDEVIV); and (5) all installations and trained personnel will be in place and will be fully operational.

F. BASIC ASSUMPTIONS ABOUT ACHIEVEMENT OF PURPOSE: Major assumptions related to the achievement of the purpose of this project are that: (1) the Government of the United Republic of Cameroon will provide continuing strong administrative and financial support; (2) the cooperating international organizations (FAC, FED, USAID) will provide the full technical, financial, and material support called for under the terms of this project and related projects; (3) research will develop improved varieties and cultural practices on a continuing basis; (4) the local farmers will make the necessary efforts; and (5) qualified local technicians will be available to receive the specialized training necessary to enable the continuation of activities when the project is terminated.

G. OUTPUTS: The following outputs, necessary but not sufficient to the achievement of the project purpose, should be achievable through correct management of project inputs.

1. Adapted, improved varieties of peanuts and sorghum seed available for general distribution (time frame).

2. A distribution network for seed and other crop inputs established through SODECOTON, the Cameroonian extension system, and MIDEVIV. Operational supervision of the system will be maintained by the MIDEVIV staff in the province headquarters at Garoua.

3. Revolving fund to facilitate the exchange of seeds for regular grains and the supply of chemicals, managed by the MIDEVIV representative at province headquarters in Garoua.

4. Extension agents trained in the promotion of the new cultivation practices.

5. Promotion campaigns will be conducted throughout the project area from second year onward.

6. Cameroonian personnel trained and handling the functions of the expatriate personnel at the Maroua Center, the Sanguéré Center, and the Provincial Extension Service.

H. OUTPUT INDICATORS:

1. Peanut seed distribution through formal channels expanding from 92 tons during the off season between the second and third years of the project to at least 300 tons per year by the end of the project. Additional seed will be distributed through informal channels.

2. Sorghum seed distribution through formal channels expanding from 300 tons between the second and third years of the project to 900 tons

per year by the end of the project. Additional seed will be distributed through informal channels.

3. Enough funds in the revolving account to cover current operating expenses related to the distribution of seed. The amount will have to be determined once the project is in operation. The amount needed will not be too great in that the employees of the system are regularly salaried employees of various government agencies and the seed will be provided to the system free from the government seed farms.

4. Persons trained as follows:

(a) In-service training: Of one month's duration, for two hundred agents of the extension service, and of one week's duration, for 500 agents of SODECOTON. On-the-job training of unspecified amounts will be given under this project and related projects, most specifically the Young Farm Families Project. (b) Third country training will include six weeks in Nigeria at the International Institute of Tropical Agriculture facility in Ibadan with the following persons having completed the course prior to the first planting season (that is, toward the end of the first year of project activity): (1) One agriculture officer of MDEVIV who will be directly concerned with the project; (2) Two Agriculture Officers who are the Zone Chiefs of the Sectors involved in the first year extension variety trials; (3) One member of the staff of the Provincial Delegate in Maroua designated to oversee all aspects of the project; (4) Three adjoint techniques who will be in charge of the day-to-day operations at the three multiplication stations; (5) Three sector chiefs (of each of the three sectors selected for first year trials and demonstrations); (6) Six monitors (two from each of the above three sectors).

In addition, 6-10 upper level Cameroonians will have been given a short tour to observe similar projects already underway in neighboring countries.

(c) U.S. Training. Five Cameroonians will have been given one year each of training in the United States and will have returned to their positions. U.S. training is as follows:

(1) three Cameroonians of adjoint technique or higher rank, after having worked with their American counterparts for one year, will have received one year of training each in seed production and processing (preferably at Mississippi State, which can tailor the training to specific needs).

(2) One Cameroonian with the rank of adjoint technique or officer will have completed by the third year of the project the special course in extension information at Indiana University, and be in charge of extension information for the Northern Province.

I. OUTPUT ASSUMPTIONS:

It is to be assumed that the inputs will be in place on time, they will be effective both individually and jointly, and that working conditions will permit inputs to be transplanted into outputs. More specifically, this means improved varieties are available and accepted by the farmer, appropriate cultural practices are followed by the farmers, returned participants will continue to work in the fields in which they are trained, and the cooperating countries will be able to continue the links among research, plant breeding, seed multiplication and dissemination, information gathering activities, and the user farmers.

J. INPUTS (A.I.D.)

1. Three long term technicians

a. Agronomist/Seed multiplication.

This person is to serve as an additional staff member at the Maroua Research Center with the following duties:

(1) Participate in procurement improved seed varieties and related technologies from JP 26 and other sources. Included would be visits to Mexico (CIMMVT) India (ICRISAT), and Nigeria (OAU/STRC and IITA)

(2) Oversee varietal trials at Maroua, Sanguéré, and other locations so as to determine best exotic and indigenous varieties to be multiplied.

(3) Oversee stage one multiplication at Maroua and Sanguéré including seed processing, testing, and storage.

(4) Advise and assist others with respect to maintaining seed quality in stage two multiplication.

(5) Provide in-service and on-the-job training of counterparts.

b. Agronomist/Seed Processing Specialist:

This person is to serve as an additional staff member at the Sanguéré Station with the following duties:

(1) Oversee preparation of sites for stage two multiplication of seed at Sanguéré, Djamka, and elsewhere.

(2) Oversee distribution of seed for stage two multiplication of seed.

(3) Oversee stage two multiplication:

(4) Assist third specialist in assuring that extension agents and farmers have access to cultural and pest control information and practices developed elsewhere.

c. Agronomist/Extension: Specialist

This person will be attached to the Cameroonian extension service in North Cameroon, as part of the staff of the Ministry of Agriculture Delegate at Garoua.

While attached to the service, he will be responsible for working with and through other agencies where possible and necessary. Specific duties include:

- (1) In-service and on-the-job training for extension agents in conducting demonstrations of seed use and cultural practices throughout the project area.
- (2) Work with the agents in the selection of farmers for demonstration plots.
- (3) Work with the agents in conducting the demonstrations showing the superiority of project seed and improved practices.
- (4) Work with the agents and other institutions in conducting publicity campaigns.
- (5) Oversee, possibly with short term assistance, distribution of improved seed to outlying areas.
- (6) Be responsible for assuring that agents and farmers have access to cultural and pest control information and practices.

It is to be expected that during the course of the project, the work required will not be as neatly broken down as depicted above, and that at various time each of the technicians will be active in performing some of the duties listed for the others.

2. Participant Training: Participant training is tailored toward providing the new skills needed to make the seed multiplication and distribution system work as a system. Where the additional skills require additional positions, the Government of the United Republic of Cameroon is being requested to establish the new positions. With the above in mind, training is projected as follows:

a. United States

- (1) One year of general extension training at a U.S. University for one Cameroonian trainer of extension agents.

(2) Three years of undergraduate training for three Cameroonians in seed production (one year per participant).

(3) A course in extension information for one Cameroonian participant.

b. Third Country

(1) Two-week tours of projects in neighboring countries for sixteen executive level Cameroonian personnel.

(2) Six-weeks in Nigeria at the International Institute of Tropical Agriculture for sixteen Cameroonians directly engaged in project operations.

c. Host Country

(1) In-service training courses for up to 500 Cameroonian agents in groups of forty each.

(2) On-the-job training for as many Cameroonians as can be reached, but especially, of course, for those in continuous direct contact with the American technicians.

3. Other Costs: The major item under this component will be \$150,000 for local construction, including materials, of three warehousing sheds to be located at Maroua, Sanguéré and Dadjamka. Other local costs will be calculated per standard A.I.D. formula for support of American technicians. Finally, \$20,000 is projected for in-service training programs in the host country.

4. Commodities: Commodities include three Peugeot 50 pick-up trucks for transport of technicians and materials, audio-visual equipment (\$3,000), seed processing equipment for Sanguéré and Dadjamka, laboratory equipment for Maroua, Dadjamka and Sanguéré; and field machinery for Sanguéré and Dadjamka. Commodity costs are given in the financial analysis section and commodity lists are presented in an annex.

K. INPUTS - HOST COUNTRY:

1. Technicians - Seven new positions are to be established to carry out the project, while several hundred other persons will be involved at least on a part time basis.

a. The seven new positions include counterparts for each of the three A.I.D. technicians, three adjoint techniques to manage the day-to-day operations of the multiplication centers, and one agricultural information specialist position to be added to the staff of the Agricultural Delegate at Garoua.

b. The technicians involved on the project part time include most of the staff of the Agricultural Delegate at Garoua, the staff already in place at Maroua, Sanguéré, and Dadjamka, and several hundred agents of the extension service and SODECOTON.

2. Training: The host government will be responsible (under a separate activity) for establishing and operating an in-service training program in and near Maroua. This includes provision of facilities and teaching staff.

3. Capital Inputs: Land - the host country will make available to the project at least 250 hectares for trials and multiplication purposes.

4. Operating Costs: The host government will fund official expenses, operating costs for the multiplication centers, and operating costs of vehicles and other equipment used by the government for project purposes.

L. INPUTS - OTHER DONORS: France provides various kinds of technical and other assistance to SODECOTON, whose agents will be active in project activities. It is also funding a resettlement project, which may be used eventually for seed demonstrations, and varietal trials.

The UNDP is assisting by providing technicians and funds for the Cereals Marketing project, which will be essential for rational marketing of increased production.

The International Union for Child Welfare is providing technical and financial support for the Young Farm Families Training Center at Dadjamka, where multiplication activities will take place, and at Goyang (near Maroua), which is soon to become the headquarters for in-service training programs.

M. BASIC ASSUMPTIONS ABOUT MANAGEMENT OF INPUTS

1. Competent staff and counterpart will be provided.
2. A.I.D., IUCW, and host country support will be forthcoming.
3. The necessary amounts of land can be made available to the project without delay.
4. The host Government will select and recruit suitable candidates for participant training as required by this project paper.

N. BUDGET AND TIME SCHEDULE OF U.S. AND OTHER INPUTS: See Section IV and attachments.

## II. PROJECT BACKGROUND

While the United Republic of Cameroon was not as severely affected by the drought of the early 1970's as were its neighbors, the project area did suffer and the GURC is alert to the possibilities of a shortage of staple foods in the future. The area has sustained deficits in grain production versus consumption in recent years, with estimated cereal requirements reportedly rising from 10,000 tons in the 1971-1972 season to 44,000 tons in the 1973-1974 season.

Perhaps the most serious effect was that at the height of the drought prior to the 1974 planting season (June), the farmers sold their retained seed supply when grain prices skyrocketed. At the ensuing planting season they were obliged to plant whatever seed could be found -- with a resultant mixture of varieties, many of which were unsuited to their areas. Consequently, an immediate improvement in production is possible simply by producing and maintaining pure seeds stocks of the locally preferred varieties of sorghum. New improved varieties and cultural practices offer further potential for increased production of both sorghum and peanuts. It is important to have a seed production system in place in order to avoid much losses in the future. Evidence of the country's concern is found in requests for assistance for the seven projects directly related to seed production and distribution listed in the Chopra Report.\*

A recent attempt to meet the needs for seeds of food crops saw the creation of SEMNORD as an organism of the Ministry of Agriculture. After about five years of operation, SEMNORD was dissolved because of the extremely high cost-return ratio. A government decree of September 1973 incorporated the functions of multiplication of food crop seeds, fruit trees, and cash crop plant material into MIDEVIV (Mission de Développement des Cultures Vivrières, Maraîchères et Fruitières), which is also charged with farm credit considerations and the marketing of the resulting produce. To date, MIDEVIV has been concerned largely with operations in the South-Central Province but is preparing to launch efforts in the Northern Province, including some efforts previously carried out by MIDEVIV. SODECOTON, an autonomous agency responsible for all aspects of cotton production in the country, has been enlisted to devote a few hundred hectares of its land to sorghum and peanut seed production of current varieties to help

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\* CHOPRA, Kr. R. (F.A.O) Report to the Government of the United Republic of Cameroon on the Development of Seed Industry. December, 1973

fill the present gap in seed supplies. Small quantities of seeds for farmers are produced at other stations, but there is little national coordination of these efforts.

For more than ten years there has been some plant breeding work on grains by IRAT and annual varietal trials on a Central and West African regional basis by IRAT and the OAU/STRC team. The outstanding contribution of these efforts has been the introduction of IRAT-55, a variety of red sorghum which has been well accepted by many farmers in Northern Cameroon. A "Georgia hybrid" peanut for local consumption as food and the 28-206 oil peanut have been tested and seed has been multiplied for farmer use. Still needed are white sorghums and higher yielding peanut varieties. The heterogeneity of soils and varying preferences among ethnic groups indicate that a choice of improved varieties of sorghum is needed.

In its desire to locate and multiply improved varieties, agricultural officials are anxious to accelerate and proliferate field trials throughout the north, and to greatly increase the number of demonstration plots for farmer enlightenment. The latter activity would incorporate any recommended cultural practices which would be economically advantageous to the farmers.

The need for high quality food crop seeds and some possible approaches to meet the need have been explored in several independent studies by local and international organizations as follows:

- Boyer Bernard. Etude d'Une Organisation de Multiplication et de Diffusion de semences au Nord Cameroun. Dec. 1974.
- Chopra Kr. R. (FAO). Report to the Government of the United Republic of the Cameroons on the Development of Seed Industry. Dec. 1973
- Jellema B. M. (IITA). Improvement of Cereal Production and Marketing in the Central African Region. 1973.
- A.I.D. "Agricultural Sector Statement". (draft DAP, Fall 1974).
- Kouebo Martin. Projet de Multiplication et de Diffusion des Semences Améliorées dans la Province du Nord Cameroun. 1975.
- Morris William. "Suggestions for Improved Seed Production in Northern Cameroon". 1974. (Internal A.I.D. memorandum.)
- ONAREST (Cameroon). Projet: Contribution à la Production de Semences dans le Nord. 1975.

The European Development Fund (FED), which maintains an office in Yaoundo, has also been interested in supporting activities addressing the food crop seed situation.

Against this background a PRP was prepared in February 1975 (Bahl, Morris, Webb) and was favorably reviewed by an expanded review committee. The relevance of the project to both AID and GURC objectives, as well as the technical approach envisaged in the PRP, were determined to be fully acceptable to the committee.

With the authorization to prepare a PP, a design team of three members was dispatched to the Cameroon in late March for three weeks. This project paper was prepared after drawing upon additional in-country information, including the studies above, meeting with officials of the host government and donor agencies and a 6-day field visit to the Northern Province in company with GURC agricultural officers. Discussions of the substance of the proposed project were held with provincial authorities, USAID, ONAREST (agricultural research division), Ministry of Agriculture, Ministry of Plan, FED, and FONADER (the GURC central credit management office) and the International Union for Child Welfare, a Swiss organization in charge of the Young Farmer Training Project. Without exception, all of these entities were enthusiastic about the proposal and pledged full cooperation in its implementation. Indeed, the rash of studies recently undertaken have contributed to a keen interest toward launching an action program without further delay.

Three substantive changes from the original PRP have evolved as a result of the Project Design Team study:

(1) The principal crop seeds to be multiplied at the outset will be sorghum and peanuts rather than sorghum and millet. This reflects the needs expressed by officials both in the capital and in the province, as well as farmers' wishes. Millet is grown, but primarily in the lower rainfall areas of the extreme north while sorghum is a much more productive crop in most of the Province. The prospects for improving sorghum production are also greater, with a likely greater impact on the total food supply.

Farmer interest in peanut production is increasing and at least 25% of the recent peanut crops is eaten by the local people, with the remainder being processed into cooking oil. Although yields seem relatively low, and were particularly low in 1974, peanuts are still regarded as a profitable crop. Improvement in cultural practices and the possible introduction of better adapted varieties could make a substantial improvement in yield, with consequent economic benefits to the growers and more protein food for the populace.

(2) Complications implicit in operating the project across the border into Chad could weaken the total effort of the project. The deletion of millet seed as a priority need for the Cameroon makes the project less applicable to Chad. It was, therefore, decided to restrict direct activities to the Cameroon. (This would not preclude spin-off benefits to Chadian farmers resulting from the sale of sorghum seeds or grain to Chad through existing channels.)

(3) Second stage seed multiplication has been shifted from small farmers to government controlled installations for several reasons: (i) the size of small farms presents major problems in logistics and supervision, particularly during the rainy season when many roads are impassable for several days at a time; (ii) isolation of seed plots from all other varieties is necessary to prevent contamination during the pollinating period; (iii) the close supervision and proper management of the multiplication plots on properly controlled land (not research stations) can serve as effective and dramatic demonstration plots for both extension workers and farmer groups.

This change in emphasis does not eliminate the farmer from the seed dissemination process, but puts him in the final stage in which he is free to sell the seed from the farmer demonstration plots which will be part of the extension component.

The above, and other points raised by the PRP Review Committee, were explored and settled to the satisfaction of the Design Team either in verifying points raised or in making indicated adjustments in the project.

### III. SOUNDNESS ANALYSES

#### A. Technical Description and Analysis of Project

##### 1. Introduction

The decision with respect to the nature and amount of technical assistance, to be extended, i.e. technicians, processes, and equipment, has been based on the conclusion that a technical need for seeds of the necessary proportions to support a major input does exist. Looking beyond the need for seeds to the need for increased sorghum and peanuts crops, the production process involved in meeting the latter need was broken down into a number of elements including:

- (1) Making available better varieties through research and breeding;
- (2) the multiplication and dissemination of these varieties as well as purified strains of native varieties to the farmer;
- (3) the use of improved cultural practices and accompanying inputs by the farmers to produce greater yields; and
- (4) making provisions for storage and marketing of the harvest. A reexamination of these elements, as they exist in Northern Cameroon, while preparing the Project Paper confirmed earlier judgments that the key constraint in the production process at this time is number two, i.e., seed multiplication. This is not to deny that much remains to be done with the other areas, especially the use of improved practices by farmers. Nevertheless, as noted elsewhere in the paper, better seeds are available for testing and multiplying, systems and programs are in existence for encouraging farmers to improve cultivation practices, and a program is already underway to improve the marketing system (the Cereals Marketing Board).

The recognition by the GURC of the need for an effort in seeds production and dissemination is manifest in the six surveys of the problem already undertaken and seven proposals for assistance drawn up by various responsible agencies, as well as instructions issued by the central government to the various agencies, especially MIDEVIV and ONAREST, to begin work on seeds multiplication. This project represents the minimum configuration of inputs and processes required to enable these agencies to set a seed multiplication system in effect several years sooner than they would otherwise be able to, because of their current shortage of resources and expertise.

It is especially important that the program get under way now in that, as mentioned earlier, many farmers have sold their seed stocks and have replaced them with seeds obtained on the market. Much of the seed bought on the market is from the outside, including short stalked hybrids which

will segregate with respect to type from generation to generation. Even the non hybrids will contain off types, weeds, and so forth. In this situation the farmers should be particularly receptive to improved seeds consonant with local preferences.

## 2. Project Technical Operations - Personal Requirements

The project will be carried out in three overlapping stages with one member of a three man technical assistance team assigned to each of the three stages. The first stage involves conducting field trials of both peanuts and sorghum, over as much of the project area as possible, while multiplying breeder sorghum at the station near Maroua and breeder peanuts at the station near Garoua. The second stage involves multiplication of sorghum at Maroua and Dadjamka and peanuts at Sanguéré. In later years of the project, additional sites may be selected for seed multiplication, especially the new Young Farm Family Training Centers to be opened throughout the region. The third state involves the dissemination and use of the seeds and related practices throughout the project area. The specialist assigned to first stage activities would come on board in September of 1975, the one assigned to the second stage in March of 1976, and the third specialist would arrive in March of 1977.

In addition to the three overlapping stages of project operations, a number of other factors weigh in favor of a three member assistance team, as opposed to a greater or smaller number. These include the wide disposal of variety trial locations, the three widely dispersed multiplication centers, the amount of work involved, and the particular breakdown of duties involved in carrying out the operation. Further, the presence of two agronomists is designed to keep one specialist in the field at all times, while the other is out of the project area, either on official business or on leave.

Conducting all breeding and multiplication activities at the Maroua Center might eliminate the need for one of the two agronomists. However, the non availability of the necessary land, the more favorable growing conditions for peanuts at Sanguéré and the desire of the GURC to keep multiplication operations as widely dispersed and as close to as many farmers as possible for educational purposes, weighed against the selection of a single multiplication center. Turning over varietal trials and multiplication at Maroua to staff already there appears unfeasible in that the Cameroonian geneticist is fully engaged in seed breeding, and the French agronomist is in the process of departing, and as director of the Center, was kept busy with administrative matters in addition to his agronomic work in any event. With regard to the possible need for a larger team, the most likely need for an additional person is in the extension area, but, at the time of project design, it is thought that one person can do the work.

## 3. Varietal Testing and Seed Multiplication

To lay out the technical operations in a little more detail, the first A.I.D. agronomist, his counterpart, and one adjoint technique will test improved varieties of sorghum at the ONAREST station in Maroua, the Sanguéré station, and at as many other locations as feasible within the project area (for instance, Guetale) to ascertain the suitability of the

various varieties under all conditions existing throughout the project area. These technicians will also test peanut varieties at Sanguéré and elsewhere. Finally, these technicians will multiply breeders seed of superior sorghum varieties at Maroua and peanuts at Sanguéré. These technicians will be regarded as staff members of the Maroua station.

Second stage multiplication of both peanuts and sorghum for distribution to farmers will be the responsibility of the second expatriate agronomist, his counterpart, and two adjoint techniques, one located at Sanguéré and the other at Dadjamka. Second stage sorghum multiplication will be conducted both at Sanguéré and at Dadjamka while second stage multiplication of peanuts will be conducted at Sanguéré. The expatriate agronomist and his counterpart will work both at Sanguéré and at Dadjamka, but will be regarded as staff members of the Sanguéré station.

The sorghum variety, IRAT 55, recommended by the Maroua center, is at present being multiplied, as are peanut varieties GH-119-20 and 28-206. All these varieties are superior to traditional varieties being grown by the farmers of the area. Seed of additional new varieties are available for testing from JP 26, IITA, CMMYT, ICFISAT, and other sources.

The project would, at the outset, however, multiply those varieties already recommended by ONAREST and which have been accepted by farmers. The primary objective would be to increase the supply of high quality seeds to meet current demand. Secondly, efforts would be made to purify the seeds stocks of the best available traditional varieties.

#### Varieties selected for field trials for farmer observation

The ONAREST scientists have been conducting field trials on their own crosses and on lines imported from other areas. Some of these tests have been in conjunction with the JP-26 Project on Major Cereals for West Africa. Of the scores of lines tested over a period of years, a few have been deemed worthy of trials beyond the research station observation plots. These will be the object of side-by-side comparison under conditions more comparable to the small farm situations. While these trials will be under the responsibility of project staff, ONAREST specialists regard this outreach as providing valuable readings for them and will collaborate with these efforts. This will accelerate the feedback on farmer reactions and consumer acceptability.

It is conceivable that some varieties, particularly of peanuts, are proving superior in neighboring countries of similar ecological zones and from ICRISAT. Importations of samples for field trials in Cameroon is to be encouraged.

Once the field experience with any of the varieties or lines in the field trials concludes that certain ones are superior to existing varieties (as determined by the already existing National Seed Committee) those selected will move into the "multiplication category."

VARIETIES TO BE MULTIPLIED NOW (Information provided by ONAREST April 1975)

Peanuts (oil type)	28-206
Peanuts (eating)	GH-119-20
Sorghum, Red	IRAT - 55

VARIETIES TO BE TESTED

Peanuts (early)	48-115-A
	55-537
	28-204
Peanuts (late)	29-103
	BC 59-4-34
	69-101
	87-3-1

Sorghum, white

Local hybridization	CK X DA
	CK X BL
	CK X YO

Introductions	Shambal
	CE-99
	L-30
	L-9

Naga White (white seeded, brown subcoat)

While the government research station at Maroua presently lacks staff in numbers and experience required for a seed multiplication and dissemination activity of the scope required to meet the project goal and objective, it does represent a good point from which to start. Much of the required work, on a limited scale, has already been conducted there. The future

of the station is even more promising for two reasons. The GURC has recently appointed Dr. Ekebil, following his training in the United States, as Director of the Food Crops Institute of ONAREST, the Cameroon scientific and technical research institute which oversees the activities of the Maroua station. Secondly, revision in the administration of the station is taking place to improve its effectiveness. The present staff is composed of a Cameroonian seed breeder, a French agronomist, a Cameroonian entomologist and a phytopathologist. There are fifteen other staff members of lesser rank on the permanent staff, with additional workers being hired as needed. Some fifty hectares of land are available for testing and production. A complete set of field machinery, including two tractors is on hand, as well as a theater and other smaller tools and implements and a small seed warehouse.

The project would add a larger seed processing-warehouse building, including a seed cleaner and a basic seed laboratory. A USAID agronomist, living in Maroua, would work primarily at this station, working with the additional staff provided by the GURC in overseeing varietal trials and the additional fifty hectares to be brought into seed multiplication. The site, existing facilities, and back up staff already on hand combine to make this station an ideal location for field trials and first stage seed multiplication.

The IUCW at present has two stations in the project area where young farm families are trained. One of these stations, Dadjamka, is suitable for additional second stage seed multiplication, in that up to 200 hectares can be made available, and the director of the station is anxious to cooperate with the project. Using the station for this purpose, as well as for field trials and demonstrations, also provides an excellent extension medium. Moreover, the IUCW intends to expand their program to additional stations in the project area beginning next year. All of these stations would be available for extension, field trial and demonstration purposes. Some of them would be available for first and second stage seed multiplication as the project expands.

#### 4. Scope and Impact of Seed Multiplication

From the 1966-67 to the 1972-73 seasons, 6 years, the average area planted to sorghum and millet in the project area was about 443,200 hectares. The average yield was 712 kg/Ha. For the same six years, the area planted to peanuts was about 72,000 hectares and the average yield was 666 kg/Ha (decorticated). At present, the recommended planting rates are 10 kg/Ha for sorghum and about 65 kg/Ha of decorticated peanuts. It is believed that both these planting rates can be reduced by half, but until further trials with improved seed establish this fact the higher rates will be used. A conservative estimate of seed production would be 1,000 kg/Ha for both these crops, (decorticated peanuts). Again, it is believed that these yields can be substantially increased, but this can only be indicated by field trials.

A Ministry of Agriculture station at Sanguere is the only location known at present where soil and other conditions are conducive to growing peanuts and where sufficient land (200 ha) is available. If half, or 100 ha, of this area is used for peanuts, about six hectares used for first stage seed multiplication would furnish seed for the remaining area. (Actually, 92 hectares, using the figures cited in the paragraph above.) These 92 hectares could produce 92 tons of decorticated peanut seed, which, when distributed to farmers in the project area, would plant 14,000 hectares or about 2% of the total area now planted to peanuts. If, ideally, all of the resultant harvest were used for seed, it would plant 30% of the total peanut area, of course, the next, or third year, all of the area would be covered. Continuous renewal of seeds stocks by the first and second stage multiplication would ensure replacement of farmer seed which has deteriorated by mixture, crossing, etc.

Obviously, the ideal conditions just cited will not prevail. Other, favorable factors should enter in, however, including the ability to cut in half the amount of seed peanuts needed per hectare, as well as the ability to expand the hectareage on which the seeds are to be multiplied. Taking these factors into consideration, it is expected that, using formal and informal channels, improved seeds should be available to all who desire them by the end of the six year life of the project.

Although a much larger area is devoted to sorghum than to peanuts (average of sorghum and millet together is 443,200 hectares), the picture is considerably brighter than for peanuts because of the much greater yield which can be expected per kilogram of seed. An area of about three hectares at the ONAREST Maroua station for first stage multiplication should furnish enough seed to plant 100 hectares at Sanguéré and 200 hectares at Dadjamka for second stage multiplication. Second stage multiplication should produce 300 tons of seed, which would plant 30,000 hectares when distributed to the farmers. This is slightly under 7% of the sorghum-millet area. If only one-seventh of the crop, produced by the farmers, is used for seed, the entire area would boast the higher quality seeds.

To make the aforementioned first and second stage multiplication, as well as testing, field trials and demonstrations possible, the project will add certain facilities and equipment to the Sanguéré and Dadjamka stations in addition to that mentioned above for the Maroua station. At all locations the facilities and equipment to be added have been kept to a minimum. Any required equipment which can be made locally will be so made for several reasons. For example, a seed treater to dry chemicals can be made by mounting a used drum, properly modified, diagonally on a shaft provided with a crank and supporting frame. The resulting machine may be slower to use than an imported machine, but it is fast enough. Its manufacture uses local labor; it can be repaired or replaced locally; and it costs less. Wire ties will be used for closing bags. They can be fastened

by a \$2.00 twister in place of a sewing machine costing over \$300.00 and for which parts and service would not be available in case of a breakdown. No conveyors for either grain or bags are anticipated. It would probably be less costly to use local labor for such purposes and there will be less machinery to break down.

At both Sanguéré and Dadjamka field equipment, including a tractor, will be provided by USAID for growing sorghum for seed. In addition, equipment necessary for peanuts will be provided at Sanguéré. A building of 400 square meters will be erected at each of these locations by USAID for seed warehousing, installing seed processing machinery and a basic seed laboratory. Seed processing equipment will not include a dryer as harvest comes in the dry season. An air screen cleaner will be the basic machine, one of which will be installed at each location. A basic seed laboratory will be furnished each of the three locations for moisture testing and purity determinations. Germinators are not included as the temperature is always warm enough for germination testing - all that needs to be added to the seed is moisture and such an apparatus can be made locally.

#### 5. Dissemination of Seed and Cultural Techniques

The project proposes, with the extension specialist, his counterpart, and the Cameroonian information specialist, to disseminate new seeds and cultural techniques primarily through two channels;

(1) the young farmer trainees, numbering about 40 per year who complete the Dadjamka and Goyang training programs and return to their villages. Their subsequent agricultural enterprises are presently guided for about three seasons by extension agents attached to the staff of the two centers;

(2) in-service training of extensions staff (both regular service and SODECOTON) who are in sectors of major importance to sorghum and peanut production.

#### First Year

Two sector chiefs, four vulgarisateurs (disseminators) (two from each Sector), and two extension agents from the Young Farmer Centers would join the three Adjoints techniques in charge of seed multiplication in a six-week training session in Nigeria (IITA) to study seed multiplication, variety comparison trials, cultural recommendations and demonstration techniques.

The two Young Farmer Training Center (YFTC) agents would ensure that their young farmers learn and practice the recommendations in their sorghum plantings at the centers. The agents would also set up a

sorghum-varietal trial plot at each center, in each case including a traditional type of planting for comparison. Nearby farmers would be brought to the centers to see the results, a total of 2 varietal trials per 40 farmer plantings.

The four sector vulgarisateurs would each set up two types of demonstrations in their areas. The first is to be a small planting of IRAT 55 sorghum (and/or GH 119-20 peanuts) using all package "recommendations regarding seed treatment, land preparation, planting time, planting rate, fertilizing, weeding and pest control" - in proximity to a traditional planting. Such cultural practices have already been developed for the planting of both sorghum and peanuts at the experiment station level, using optimum conditions. They haven't been accepted and approved at the farmer level. The package recommendations as they are now available from the Maroua station will have to be further developed, demonstrated, and, perhaps, modified as the project unfolds. These package recommendations will be adopted to the varying local environmental conditions.

The second is to be a varietal trial of promising sorghum varieties, plus IRAT 55 and a local stock. All of these plantings should be centrally located, easily accessible and well labeled. Farmers should be encouraged to inspect the plots on organized field trips, particularly at mid-season and harvest time. A minimum of four result demonstrations and four varietal trials will be undertaken.

More advanced field trials involving additional varieties would be conducted by technical personnel at Maroua, Dadjamka and Sanguéré. These would be the subject of field visits by extension personnel and training center personnel.

A participant should be selected for 6 months of U.S. training in agricultural information methods, stressing the use of radio and economical visual aide.

### Second Year

Three more sectors would be selected for expansion of the field work. The SODECOTON sectors should be included. In-service training would be conducted for:

- four monitors - two additional from each of two previous sectors;
- two sectors chiefs - from SODECOTON areas;
- one sector chief - from additional regular extension services; and
- six moniteurs - two from each of new sectors.

The training of three weeks duration would be conducted by the U.S. advisors, the Project Leader, and the two sector chiefs. Subjects would be primarily on extension methods and specifically related to this Project. The four original monitors and the two YFTC agents would also

participate to share their experiences and to up-date their own information. ONAREST would provide the latest varietal and cultural information.

The planting season extension efforts would repeat and expand upon the previous season. With the original four monitors doubling their demonstrations, and the YFTC monitors using "graduate" farmer plantings as demonstration plots, the season should produce a minimum of:

- 80 farmer plantings;
- 18 method/result demonstrations; and
- 20 variety trials.

### Third Year

With a substantial seed supply projected for this year, and publicity support by the returned agricultural information specialist, this season should see a major extension thrust. The two previous years will have provided valuable experience to five sector chiefs and fourteen monitors outside of the YFCT staff).

The in-service training should again be conducted with an expanded enrollment to twice that of the previous year. At this point a determination must be made regarding whether to extend the activities to additional areas or to intensify them in selected areas. In either case, a doubled training enrollment is probably the optimum number which can be handled in one in-service training course. If greater expansion is feasible, two sessions would be needed. From this year forward, a rhythm should have been reached in the training of new extension agents, allowing for attrition. At least one-week of training for all extension participants should be provided to bring them up-to-date on recommended varieties and practices since these may change from year to year.

The third year field work should produce as a minimum:

- 120 farmer plantings (YFTC and graduates);
- 36 method/result demonstrations; and
- 36 variety trials.

If previous demonstrations have been convincing, it would be reasonable to expect that several hundred additional farmers would be following the "packages" this year. They will require close assistance from their monitors, at least through the first growing season. Sector chiefs will need to collaborate closely with MIDEVIV and the Direction of agriculture to ensure that inputs are available on time.

The three persons conducting these operations would be on the staff of the Agricultural Delegate at the province headquarters in Garoua.

### C. SOCIAL SOUNDNESS ANALYSIS

#### Introduction

The sociological impact of the project involves acceptance over a six-year period by up to, say, 300,000 farmers who plant either peanuts, sorghum, or both, to accept new varieties of these crops and related inputs and practices, as well as the reaction of these farmers to the people and techniques employed to persuade them to accept the new seeds, other inputs, and practices. It has been concluded by the Design Team that the two major sociological factors involved in carrying out the project will be (1) empathy between farmers of given ethnic groups, social status, and set of interests, on one hand, and government officials of the other ethnic groups, social status, and sets of interests, on the other, and (2) widely varying ethnic preferences for various varieties of sorghum. These, and other factors, will be discussed in later parts of this section, by first presenting the general sociological context, which should be of general benefit to A.I.D. technicians assigned to the project, and then discussing the relationship of this project to the sociological context.

No studies with any pretense to scientific validity have been undertaken. The general background has been taken, in places verbatim, from the Area Handbook for the United Republic of Cameroon, prepared by the American University, as confirmed and modified through discussions with officials of the host country and other donors. The discussion of the relationship of this project to this sociological context is based on many years of experience with seed multiplication and extension work in Africa and elsewhere, and a comparison of this context to the earlier experiences.

#### Background

The immediate project area is divided among the Moslem Fulani (350,000) and approximately twelve animist groups totalling 600,000. The animists can be divided broadly into the tribes who fled into the mountains to avoid vassalage under the Fulani during the early 19th century invasion of the area by the latter, and the tribes who remained on the plains and became subject to domination by the Fulani. Christianity is now making inroads among some of the animist tribes. The demographic map depicting the location of the various tribes of the area and their numbers is attached as an annex.

The Fulani were traditionally herders, but nearly all of these in the project area have become sedentary, getting their living from stockraising and farming. Traditionally, they have cultivated their own fields only

when forced to do so by circumstances. It is observed by government officials in the area, however, that circumstances are more and more forcing the Fulani to work their own fields. Traditional stockraising activities do not bring in the income to buy the transistor radios, shoes, bicycles, and watches that are becoming part of the good life. Modern governmental structures, recent governmental decrees and social and political development by the lesser tribes have placed ever more stringent limits upon the tribute to be exacted from or the control exercised over the animist tribes who farm Fulani land. Nevertheless, the various northern tribes, especially the Fulani, continue to be conscious of their traditional place in the traditional social hierarchy and continue to act in accordance with these traditions. The Fulani continue to dominate the area as a whole.

In the past, land holding arrangements in the Fulani areas have been inextricably intertwined with political arrangements and governmental structure. The Fulani territories were divided into twenty-one lamidats ranging in size from a few square miles to many thousands, each headed by a lamido (governor). The entire lamidat was traditionally considered the property of all the Fulani. The lamido administered it in the interest of the collectivity, and he was supposed to leave the territory intact to his successor. No one - whether Fulani or stranger - could build a house or cultivate a field without permission of the lamido.

The land holding system has been modified in response to political and economic developments, but many elements of the old system remain. As the land is relatively poor, and traditional farming methods deplete soil fertility, much of the land must lie fallow. Farmers, thus continue to move from area to area in groups. A group settling in a Fulani area will still get the permission of the lamido to farm the area, and, in return, give the lamido presents. Certain of the lamido in the recent past have collected the entire crop of the farming group at harvest time, and then rationed it back out to the farmers throughout the year. This practice was prohibited in 1973 by Presidential Decree.

The government policy is to introduce cash crops and press for their continued expansion, as well as for the inclusion of all crops in the market economy. This policy has placed a monetary value on land, eroded the principle of inalienable lineage landholdings, and strengthened the trend toward individual ownership. Riches acquired by modern methods of farming are used both in the traditional manner, say, for marriage payments, as well as for such varied modern goods as bicycles, radios and fertilizers.

With the monetarization of the economy, there are a number of ways in which the Fulani on the land gain income. These include presents and payments from lesser tribes, farming Fulani lands by employing other persons as hired hands, and, more recently, farming the land directly themselves.

According to the Area Handbook, and as supported by governmental sources and project team observation, those with the least cash income and the lowest standards of living are the cultivators of the northern hills. These people are in the western part of the project area. The entire family works on small, individual holdings of terraced lands on the hill sides. They grow sorghum and millet for food, and peanuts for food and money. The individual land holdings are passed on from father to son.

The rural women of the entire project area work hard, both running the household and participating in the field work. They have great freedom of action, however, within their own small domain. They sell the surplus from their food crops and their husbands, according to the Handbook, neither know nor care how much women earn or spend. The project will reach women both by working through the Young Farm Families Training Centers and by making the results of various seed trials and demonstrations known to them.

Just as political and economic developments are altering the relationship of the people to their land, they are altering the social and political relationships among each other and between them and their government. Throughout the time of Palani dominance, the vassal tribes kept their own social organization, political hierarchy, and their land, but they had to pay tribute to the lamido. Their chiefs were appointed only with the consent of the lamido. After colonial rule was established, such chiefs were appointed by the colonial officials, who took the advice of the lamido before approving the assembly's choice. Eventually, however, support by the colonial government helped the various vassal chiefs to free themselves more and more from their former dependency upon the lamido. Nevertheless, they continued to be an integral part of the lamidat and to make payments and give presents to the traditional ruler.

The continued presence and development of a modern form of governmental structure by the current government, continues to diminish the traditional powers of the lamido. It also gives rise to continued and ongoing struggles between Palani and others for suzerainty over the land, as well as control over and participation in local politics and administration. Where a formerly vassal tribe forms the major share of the population of an area, and has gained significant economic power, it will seek to supplant the lamido as well as place its own people in the governmental administrative structure.

The lamibe and other traditional chiefs retain significant power and influence. They have come to serve as consultants to the regular government and also serve as intermediaries who effectively help implement modernizing changes.

### The Project

In so far as the project increases yields, provides extra crops for commercial markets, and provides benefits for people actually working

the land, it will probably contribute to continuation, at a greater speed, of the general social trends noted above. While social friction, as part of the social changes caused by economic development, is expected to continue, the project itself is designed to avoid any major social disruption. No major reorganization of producer activities is foreseen. With respect to methodology, it will build upon past experiences gained in the area; for instance, those of the Young Farm Family Training Centers in which groups of farmers, who have gathered voluntarily, are immersed in new farming techniques and then return to their native areas. The Centers themselves are being located to accommodate the varying sociological patterns of the area.

Widespread demonstration plots and propaganda through mass media will let the farmer evaluate for himself the value of the new ways, as opposed to some of the coercive measures taken in the past, especially during the colonial era.

To calculate some of the project benefits to the typical northern farmer, one could take the following profile:

Age - mean man	45
Married	
Children	2 - 3
Family members working	2.6
Education	6 yrs. primary school or less
Size farm (average size)	1.7 hectares

Crops

Cotton	.5 hectares
Sorghum/Millet	.9 hectares
Peanuts	.14 hectares
Corn	.04 hectares
Other crops	.12 hectares
Total	<u>1.70 hectares</u>

If sorghum yield could be increased from, say, 700 kilos/Hectare to 1,000 kilos/hectare without increased cash inputs but through better seeds and improved cultivation practices, the annual benefit to the typical farmer at a price of \$.09 per kilo for sorghum would be \$24, a significant increment to his income. Of course the benefit would not be realized in exactly the above manner, but in the form of eating better, switching some land to a cash crop, or in such other ways as the market may dictate. Further benefits, at a cost, would be realized from fertilizers and pesticides. Calculating a similar increase in the yield of peanuts, that is, from 700 kilos/hectares, with better seed and improved cultivation practices would result in an annual benefit of \$20 at a price of \$.47 per kilo.

In addition to the groupings carried out at the Young Farm Family Training Centers, a second grouping has to do with credit. As chemicals and fertilizers are part of certain of the input packages to be tried, the farmers may wish to use credit to facilitate the purchase of inputs. Credit is extended, under a new program by the Mission to develop Food Crops (MIDEVIV), to groups of 6-8 farmers each. The farmers then divide up the money among individuals according to the prior plan. The group as a whole is responsible for the entire loan. MIDEVIV sees these groups as the nuclei for future cooperatives.

As the main method of communicating the value of the improved seed is to be demonstration plots, and a secondary method could be radio

broadcast, no formal education is required to utilize the fruits of the project. Basic reading ability would, of course, facilitate a more efficient use of project benefits.

It is expected that the farmers who have attended the Young Farm Family Training Centers assisted by the International Union for Child Welfare will be the first to benefit from the project. These farm families are located in the Centers for one year each, during which they receive both formal instruction in modern farming methods and practical experience by farming at the Center under the guidance of Center technical personnel. Project personnel will seek to persuade these farmers to continue these methods with the new seeds and related practices in their home villages following their return from the Center.

It is expected that the second major group to benefit will be the most enterprising and progressive farmers in the areas of the demonstration plots.

Simple observation of the lack of vehicles, including public transport, in the project area and of the large number of people who travel on foot indicate a lack of farmer mobility. The project will seek to compensate for this lack of mobility by placing seed demonstrations in as many areas as possible and by working through several organizations to gain a broad coverage of the project area. The IUCW and the GURC, for instance, are expanding the number of Farm Family Training Centers in the project areas.

Demonstrations will be run at several, if not all of those Centers. Other demonstrations will be run by extension agents of SODECOTON and the extension service of the Ministry of Agriculture along roads and near market areas.

Improved seeds will be made available by agents of both SODECOTON and the extension service, nearly all of which already have the storage facilities necessary to carry out seed distribution.

All the various project activities that would require continued social change have been performed in the area in the past, although not always in an economically viable way. Fertilizer has been introduced with some success by the GURC with the assistance of the FAO and the SOCAME company in Douala has orally expressed interest in providing fertilizer in the project area. Cash crops, such as cotton and peanuts have already introduced the peasants to the monetary sector. The Farm Family Training Centers have been successful in persuading the farmers to adopt new methods of cultivation as have the agents of SODECOTON. The basic operational program, therefore, is not to develop hitherto unknown solutions to overcome hitherto insurmountable social problems, but to put together a program that will utilize existing structures and enable them to continue on a self sustaining basis.

**NOTE:** See annex on fertilizer usage for summary of experiences to date with the use of fertilizer in the area.

#### D. POLICY

The main policy issues that came up during and since the PRP review include: (1) Defining the number and type of A.I.D. technicians required; (2) the question of credit requirements and availabilities; (3) whether to multiply peanuts instead of millet; (4) working through existing organizations or establishing a new one; and (5) whether to establish a seed law. Issue number one has been addressed in the technical analysis, issue two in annex , issue three in the project development section, issue four in the recipient administrative arrangements section, and issue four, with respect to the seed law, will be addressed in the following paragraphs.

First, it should be noted that the primary question involved is that of maintaining quality control so that farmers are assured of obtaining a good product. A seed law is merely one among other alternative means to this end. Second, it should be noted that a seed law is most useful in a situation where a number of major producers are competing against each other and there is a great temptation to skimp on quality in order to outdo the competition while making a profit. Finally, it should be noted that in order to be effective, the agency enforcing the law must have the means and the independence necessary to enforce it.

Those involved in preparing this project paper believe that conditions existing throughout the project period weigh against promulgation of a seed law. On the one hand, the personnel available in the country with the expertise required to enforce a seed law will, most likely, be employed by the government agencies active in the single major peanuts and sorghum seed multiplication operation in the country. On the other hand, many small scale farmers will be multiplying the seed and it will be administratively impossible to make these farmers conform to the requirements of a meaningful law.

In view of this situation, it is concluded that it would be best to depend on strict standards of quality control at the seed multiplication locations combined with periodic review by the ONAREST Seed Committee to maintain the necessary standards of quality. Should conditions change during the course of the project, this position can be reviewed and, if needed, revised.

X PP

PROJECT EXPENDITURES  
AID APPROPRIATED FUNDS  
(in \$000 or equivalent)

X NEW  
       REV.       

Proj. NO \_\_\_\_\_

Title NORTH CAMEROON SEED MULTIPLICATION

<u>Project Costs</u>	FY 76	FY 77	FY 78	FY 79	FY 80 81	TOTAL ALL YEARS
Contract Personnel	98	252	282	265	228	1125
2. <u>Other Technical Services</u>						
3. <u>Capital Structures</u> (Direct) & <u>Equipment</u>	293	14	10	10	10	337
4. <u>Capital Finance</u>						
5. <u>External Training</u>			10	50	-	60
U.S. Third Country	20	-	-	-	-	20
6. <u>Other Costs</u>	25	26	26	26	28	131
7. <u>Total</u>	436	292	328	351	266	1673

Instructions; Enter projected expenditures for full year for all project specific inputs for the life of the project.

X      PP  
PRP

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PROJECT BUDGET SUMMARY  
(in \$000 or equivalent)

Country: Cameroon

X

Rev. NO. \_\_\_\_\_

Proj. NO. \_\_\_\_\_ Title: NORTH CAMEROON SEED MULTIPLICATION

1. AID Appropriated Dollars by Functional Approp. Category	FY 76	FY 77	FY 78	FY 79	FY 80	TOTAL ALL YEARS
<b>A. <u>Food and Nutrition</u></b>						
Grant						
Loan	655	312	355	283	68	1673
<b>B. _____</b>						
Grant						
Loan						
<b>C. _____</b>						
Grant						
Loan						
D. Total AID Appropriated Dollars	655	312	355	283	68	1673
Total Grant (of which l.c.)	655	312	355	283	68	1673
Total Loan (of which l.c.)						
<b>2. <u>Other U.S. Costs, Total</u></b>						
AID Guaranty PL 480, Title II						
_____						
<b>Total Other U.S.</b>						
3. Host Country, Total	17	1121	75	95	120	1428
4. Other Donors, Total <u>1/</u>						
5. Total Project Costs						

1/ Other donors support related projects essential to the success of this project.

#### IV. IMPLEMENTATION ARRANGEMENTS

##### A. Host Country Administrative Arrangements \*

In looking at the administrative arrangements necessary to the project, the project design team again looked to the four segments involved in the crop production process; (1) seed research and breeding; (2) seed multiplication and dissemination; (3) assisting the farmer with cultivation; and (4) marketing and storage. While the appropriate agencies and arrangements are necessary to carry out operations in each of the above areas, there are numerous ways in which these arrangements can be made. It was the design team's desire to use existing agencies and arrangements wherever possible.

It has been concluded that no new administrative arrangements need be made and that no new agencies need be created. The Government of the United Republic of Cameroon has already created the necessary organizational, policy, and programmatic framework

All of the operations envisaged under the project will be carried out through host country organizations which have an nuclear staff already in place. While it is judged that these several organizations have the basic capability to carry out all the activities essential to project success, administrative problems are most likely to arise in each of two areas. The first involves possible difficulty in recruiting and budgeting for the manpower needed to expand activities to the extent needed to create the desired project impact and in securing the necessary land.

The second potential area of administrative difficulty involves possible problems of coordination inherent in carrying out the activities of a single project through several organizations. The possibility of difficulty is enhanced by the inexact delineation between line and staff functions common to many Francophone areas of the world. In the case of this project, the Delegate of the Ministry of Agriculture on the staff of the provincial government is responsible for all agricultural activities, including this project, in the province. The members of his staff, however, are responsible to different autonomous agencies in Yaounde, and have been charged by these agencies with carrying out certain programs. They carry out their programs with the support of these agencies only, as opposed to support from the agricultural delegate. The parent agencies of the various members of the agricultural staff in the province include MIDEVIV, the Cereals Marketing Board, the Ministry of Agriculture and ONAREST.

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\* see annex organizational charts and functional statements.

Taking the agencies in order of their participation in the project from supplying breeder seed through marketing of grain by farmers, their titles and roles are set forth below. For organizational charts and the decrees establishing their functions, turn to annex

The ONAREST station at Maroua is in charge of producing foundation seed and for purchasing developing, and maintaining stocks of breeder seed. The station is an operational arm of the Cereals and Textiles Institute of the National Office for Scientific and Technical Research. The Institute has been made responsible by Presidential Decree for cereals crops research, including the development of improved seeds and approved cultural practices relevant to the growing of the crops. Once it has developed an improved seed or method of cultivation the Institute is to turn over the item without charge to the appropriate agency for use among the populace at large.

The Mission for the Development of Food Crops (MIDEVIV) is responsible, under a directive of 31 January 1975, for multiplying the seed and establishing a program for disseminating the seed and other inputs to the farmers. MIDEVIV has a staff attached to the office of the provincial delegate for agriculture in Garoua. Of significant advantage to the project is that this staff has an independent revolving fund that receives funds by means of regular obligations from the national government's operating budget, special subventions from the national government, borrowings, interest on loans and sales of various items, including seeds. The fund is operational.

While the program for establishing a seed multiplication program and distribution of seed is the responsibility of MIDEVIV, other organizations will carry it out. The multiplication will be performed on land held by the Ministry of Agriculture. This includes the land at the Sanguéré Agriculture Station and at various Farm Family Training Centers, first at the two in Goyang and Dadjamka and then at as many as ten new stations to be established over the next few years. The counterpart technicians at the various centers will be responsible ultimately to the province agriculture delegate, but through the MIDEVIV representative.

The actual work of distributing the seeds and related inputs to the farmers for payment in cash or kind (or free if used on official demonstration plots), collection of payments for the inputs will be performed by the agents (moniteurs) of two different organizations - the Society for the Production of Cotton (SODECOTON), will be in charge of seed dissemination in cotton producing areas and the extension service of the Ministry of Agriculture will be in charge of other areas. The former organization has about 500 agents while the latter has about 200 in the province.

SODECOTON is a parastatal organization with the purpose, as indicated by its name, of promoting cotton production. It is responsible for all aspects of cotton production, from developing superior seed stock through assisting

the farmers in growing cotton to processing as selling the final products. The heavy government representation on SODECOTON's board of directors has resulted in a broadening of its interest from cotton to other crops in the crop rotation of cotton farmers. Thus, SODECOTON has multiplied, distributed, and helped the farmers grow some sorghum and peanuts in the past year. To carry out its extension work with farmers SODECOTON has formed a highly trained extension force selected according to rigorous standards and trained under a strenuous one year program that features ample amounts of hard work in the fields, as well as formal instruction. The agent selected at random for an interview by the project design team was knowledgeable and gave convincing accounts of the manner in which he assisted farmers with their crops.

The two hundred agents of the extension service will perform similar functions in areas not covered by SODECOTON. In most cases, apparently, they are not as knowledgeable or as active as the agents of SODECOTON. To improve matters the Government has released some of the least efficient agents, established an in-service training program for others, and is in the process of establishing a more rigorous system for the recruitment and training of new agents.

Credit for the purchase of inputs has been and will continue to be made available under a program managed by MIDEVIV. See annex for results from previous years and for a detailed description of how the system works. In general, the credit is distributed through local government channels and is made available to small groups. The group, especially its elected leader, then assumes collective responsibility for the entire loan, although the loan funds may have been divided up among the various members of the group.

In the event of increased yields, and consequent marketing and storage problems, the responsibility will be that of the Office of Cereals, established by Presidential Decree in May 1974. The UNDP is sponsoring a project to help the Office establish a marketing and storage system. Basically, the Office is overseen by an interministerial board of directors, and is charged with creating a reserve stock and stabilizing prices. Price levels are fixed by the Ministry of Commercial and Industrial Development based on proposals made by the Office. Operations are just now getting under way.

The above network of organizations involved in project operations may present problems of coordination, but it also presents the advantage of flexibility. The project is not dependent, for example, on any one installation for variety testing, multiplication, or for distribution of seeds and other inputs. In sum, the Project Design Team has concluded that the network presents an adequate institutional framework within which to commence a production project.

B. AID's Administrative Arrangements for the Project

No unusual role for A.I.D. is foreseen for this project.

C. Implementation Plan

Year I

- July : Project approved, Grant Agreement executed, and PIO/T for first A.I.D. technician issued.
- September : U.S. Agronomist (seed multiplication) arrives and settles in at Maroua.
- October : Commodity orders for seed multiplication stations at Maroua, Dadjamka, and Sanguéré.  
GURC assigns agricultural officer to be a counterpart of US TA.
- November : GURC to assign 3 adjoints techniques to supervise the three multiplication plantings.  
Select 3 secteurs where field trials of varieties and practices are to be conducted next year. Chief of each secteur plus 2 moniteurs from each secteur to be included in participant group for training in Nigeria.  
Prepare PIO/P for Nigeria training. This to include the 3 adjoints techniques, 3 chefs de secteur, 6 moniteurs, accompanied by US Technician and Counterpart (total = 4).
- December : Detailed planning for seed multiplication for coming year -- varieties, locations, hectarage, location of seedstocks.  
Pinpoint locations for field variety trials-insure inputs.

PLAN OF WORK - 2

Year II

- January : Group of 14 participants to IITA for 6 weeks of training and observation at Ibadan and Samaru. U.S. TA\*to obtain seeds available at these two stations. Training to include instruction in conducting varietal trials, land preparation, layout, demonstration points, cultural recommendations for each crop (sorghum and peanuts); record keeping and data collection; harvesting procedure, seed processing and storage. Also to study recent trial results at IITA and STRC and to view current operations.
- February : Group of participants return from Nigeria.
- March : Commence arrangements for construction of buildings at 3 multiplication stations.  
  
Preparations for multiplication work and field trials.  
  
A.I.D. Agronomist Number Two arrives.
- April : Obtain seed, fertilizer, chemicals, labels for multiplication centers and varietal trial plots.  
  
Initiate PIO/T for US seed processing consultant for service in September and October.
- May : Prepare land for plantings, begin planting according to weather and soil conditions.
- June : Complete plantings, and give planting method demonstrations at 3 stations and 6 extension posts.  
  
Maintenance of all plantings, roguing of multiplication plots.
- August : Continue maintenance of plantings. Utilize for result demonstrations for extension agents and farmers. Possible trial of interplanting of legumes at 3 stations.
- September : Seed building at each multiplication center should be completed. Set up processing equipment. Prepare for harvest.  
  
Seed processing consultant arrives.  
  
Sector chiefs and moniteurs arrange for result demonstrations at harvest of varietal demonstration plots.

\* that is, United States Technical Assistance Specialist

- October** : Field days at all possible plantings.  
Seed processing, bagging, storage at multiplication centers.
- November** : Plan in-service training for additional extension personnel, to be conducted in-country. To include 6 more moniteurs from SODECOTON, 1 additional regular extension Secteur Chief and 2 of his moniteurs. (Total = 12 additional moniteurs, 3 additional Secteur Chiefs.)
- December** : Plan next season's multiplication and variety trials. Pinpoint locations for extension efforts. Arrange for seed. Publicize availability of improved seed, starting with areas around demonstration areas. Arrange distribution and payment methods. (Radio announcements and posters.)

PLAN OF WORK - 4

Year III

- January : In-service training of "new" moniteurs and Sector Chiefs. Training to be conducted by U.S. and MinAg. senior staff, to treat conduct of field trials, cultural recommendations for crops and varieties, extension methods, and observations on previous year's experiences. ("Old" Chiefs and moniteurs should participate and also be refreshed in an appropriate segment of this training) "Rag-doll" germination testing method should be emphasized.
- February : Assist Secteur Chiefs and Moniteurs in arranging for new varietal trials. "Old" moniteurs to determine farmer innovators (or groups) wishing to try "packages" on their own land.
- A.I.D. Extension Agronomist arrives.
- March : Select 2 candidates for seed processing training in U.S. and 1 for extension information and audio-visual (6 months) for 9 to 12 months training. Prepare PIO/Ps.
- Moniteurs conduct germination-testing demonstrations and assist as many farmers as possible in testing their seeds.
- April : Obtain and distribute inputs for multiplication plots, varietal trials, innovator plots.
- May : Land preparation and planting. Use as demonstrations where possible.
- June : Complete plantings. Follow-up assistance should be given to Dadjamka and Goyang graduates.
- July : Maintain plantings. Push result demonstrations for extension agents and farmers. Publicise in untouched areas.
- August : Rogue seed multiplication plantings.
- Determine extent of further trials with interplanted legumes.
- September : Seed processing trainees and agronomist information trainees of U.S.
- Harvesting and seed processing arrangements.

October : Harvesting begins. Publicize and utilize farmer plots for result demonstrations. Assist farmers in selecting best seed for retention or sale to other farmers.

U.S. #1 NO.1 departs on home leave.

November : Repeat from previous year.

December : Repeat from previous year.