

685-0205

SENEGAL

Casamance Regional Development

EVALUATION REPORT

FY 81

**EVALUATION REPORT**

**Casamance Regional Development Project**

**No. 685-0205**

**Prepared by:**

**Benjamin Stoner  
Carl E. Ferguson  
Edward K. Tapsoba  
Ousmane Sané**

**Dakar, Senegal  
July 1981**

CLASSIFICATION  
**PROJECT EVALUATION SUMMARY (PEL) PART I**

Report Symbol U-447

<b>1. PROJECT TITLE</b>  Casamance Regional Development			<b>2. PROJECT NUMBER</b> 685-0205	<b>3. MISSION/AID/W OFFICE</b> USAID/Senegal
<b>4. EVALUATION NUMBER</b> (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY)			<input type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION	
<b>5. KEY PROJECT IMPLEMENTATION DATES</b>		<b>6. ESTIMATED PROJECT FUNDING</b>		<b>7. PERIOD COVERED BY EVALUATION</b>
A. Firm PRO-AG or Equivalent FY <u>78</u>	B. Final Obligation Expected FY <u>84</u>	C. Final Input Delivery FY <u>85</u>	A. Total \$ <u>34.55</u> mill	From (month/yr.) <u>Aug. 1978</u> To (month/yr.) <u>June 1981</u>
			B. U.S. \$ <u>23.75</u> mill	Date of Evaluation Review <u>July 22, 1981</u>

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

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., program, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Extension of PACD - Preparation of Action Memo for AA/AFR.	Project Manager Charles Steedman	October 1981
2. Provide assistance to SOMIVAC for improving administrative procedures effecting transition to National Society, and in developing new project workplan.	Project Manager Charles Steedman	October 1981
3. Complete the design of credit program, including contract for short-term technical assistance to plan program administration.	Project Manager Charles Steedman	November 1981
4. Complete the redesign of health program with assistance of outside contractor and SOMIVAC Health Coordinator	Health Office Mary Diop	November 1981
5. Design specific project activities and funding mechanisms to provide needed village-level services that will be implemented by the <u>Groupements</u> .	Project Development Office	June 1982
6. Establish new quantifiable indicators for project goal achievement using new information available from project studies and technical assistance	Project Manager/ Evaluation Officer Charles Steedman & Sam Rea	June 1982

<b>9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS</b>			<b>10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT</b>		
<input type="checkbox"/> Project Paper	<input checked="" type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify)	A. <input type="checkbox"/> Continue Project Without Change		
<input checked="" type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T		B. <input type="checkbox"/> Change Project Design and/or		
<input checked="" type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify)	<input checked="" type="checkbox"/> Change Implementation Plan		
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P		C. <input type="checkbox"/> Discontinue Project		

<b>11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)</b>		<b>12. Mission/AID/W Office Director Approval</b>	
Ben Stoner, Project Development Officer, USAID/Sénégal		Signature <u>Sam Rea for</u>	
Charles Steedman, Project Manager, USAID/Sénégal		Typed Name <u>David Shear,</u>	
Ousmane Sané, Sociologist, PIDAC		Director, USAID/Sénégal	
Omar Sarr, Economist, SOMIVAC		Date <u>September 25, 1981.</u>	

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CASAMANCE REGIONAL DEVELOPMENT PROJECT

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## ABREVIATIONS

ATA	Agent Technique d'Agriculture (Agricultural Extension Agent)
BNDS	Banque Nationale de Développement du Sénégal (Senegal National Development Bank)
BOAD	Banque Ouest Africaine de Développement (West African Development Bank)
CEP	Centre des Etablissements Publiques (Public Corporations Center: in Ministry of Finance)
CER	Centre d'Expansion Rurale (Rural Development Center)
CILSS	Comité Inter-Etats de Lutte contre la Sécheresse dans le Sahel (Sahelian Drought Inter State Committee)
COF	Centre des Opérations Financières (Financial Operations Center: Ministry of Finance)
DAR	Direction des Aménagements Ruraux (Rural Construction Division: SOMIVAC)
DEEP	Direction des Etudes, de l'Evaluation et de la Programmation (Studies, Evaluation and Planning Division: SOMIVAC)
DGPA	Direction Générale de la Production Agricole (Agricultural Production Department : Ministry of Rural Development)
DTO	Direction Technique des Opérations (Technical Operations Division: SOMIVAC)
FAO	Food and Agricultural Organization
FED	Fonds Européen de Développement (European Development Fund)
FMDR	Fonds Mutuel de Développement Rural (Mutual Fund for Rural Development)
GOS	Government of Senegal
GP	Groupement de Producteurs (Farmer Groups)
HARZINT	Harza Engineering Company International
ISRA	Institut Sénégalais de Recherches Agricoles (Senegalese Agricultural Research Institute)

**ITA** Ingénieur de Travaux Agricoles  
**MAC** Mission Agricole Chinoise  
 (Chinese Agricultural Mission)  
**OMVS** Organisation Pour la Mise en Valeur du Fleuve Sénégal  
 (Senegal Valley Development Organization)  
**ONCAD** Office National de Coopération et d'Assistance au Développement  
 (National Agricultural Marketing and Development Board)  
**PIDAC** Projet Intégré de Développement Agricole de la Basse Casamance  
 (Lower Casamance Integrated Agricultural Development Project)  
**PRS** Projet Rizicole de Sédhiou  
 (Sedhiou Rice Production Project)  
**SAED** Société d'Aménagement et d'Exploitation des Terres du Delta  
 du Fleuve Sénégal  
 (Senegal Delta Development Agency)  
**SODAGRI** Société de Développement Agricole  
 (Agricultural Development Agency)  
**SODEFITEX** Société pour le Développement des Fibres Textiles  
 (Cotton Development Agency)  
**SODEVA** Société de Développement et de Vulgarisation Agricole  
 (Groundnut Basin Extension Agency)  
**SOMIVAC** Société de Mise en Valeur Agricole de la Casamance  
 (Casamance Development Agency)  
**SONAFOR** Société Nationale de Forage  
 (National Agency for Well Drilling)  
**SONAR** Société Nationale d'Approvisionnement Rural  
 (National Agency for Provision of Agricultural Inputs)  
**USAID** United States Agency for International Development  
**VG** Vulgarisateur  
 (Extension Agent)

## I. Introduction

### A. Project Area

The Project Area covers the area known as the Lower Casamance that extends east up the Casamance River to the Soungrougu Marigot. It is bounded on the north by the Gambia, on the south Guinea Bissau and on the west by the Atlantic Ocean. The area, including water surface, covers about 7340 km<sup>2</sup>.

Present land use consists of extensive areas of forest (29%), mangrove swamps and tanne soils (18%) and open valleys (15%). The area in crops is about 85,000 hectares or 11.5% of the land area.<sup>1/</sup> Normal rainfall varies from about 1300 mm at Baila to about 1435 mm <sup>2/</sup> at Ziguinchor and is concentrated during the period June - October. Since 1970 there has been a distinct downward trend in average annual rainfall at the Bignona and Ziguinchor meteorological stations <sup>2/</sup>.

Rice growing, both irrigated and rainfed, is the principal agricultural enterprise followed by peanuts, millet/sorghum and corn. Vegetable and fruit production have expanded in recent years.

Although there may be important areas of forest and other land which could be brought under cultivation, the location, extent and nature of soils suited to crop production will be known only after they have been adequately mapped and land classes established. It is anticipated that this will be done under the Harza contract.

The population of the lower Casamance is about 300,000 with 60,000 in the regional capital, Ziguinchor.

Although there are all weather roads connecting the important cities and towns, the interior is served only by unsurfaced roads and trails, many of which cannot be used during the rainy season.

### B. Scope of the Project as Designed

The project <sup>3/</sup> as designed was to assist the GOS in developing the lower Casamance through a program to :

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<sup>1/</sup> Esquisse schematique et explicative pour la Carte de Vocation du Sols, SOMIVAC-UPR, Schema Directeur Agro/78

<sup>2/</sup> Program for the Development of the Baila Marigot in Casamance, Vol. 2, Louis Berger International, Inc., 1981.

<sup>3/</sup> Project Authorization and Request for Allotment of Funds, Part II, Project No. 685-0205, 7/28/78.

1. Increase agricultural production by :

- financing the operating costs and salaries of the extension service of PIDAC;
- financing the construction of small dams and storage facilities at the village and zone levels ;
- financing technical assistance, training, housing, equipment and operating costs for the ISRA station at Djibélor; and
- financing field trials and seed multiplication and demonstration farm.

2. Increase the social services available in the lower Casamance through financing technical assistance and training, equipment, transportation requirements, salaries, and operating costs for small-scale health programs and an adult literacy program.

3. Develop an effective agricultural credit program for production and medium-term credit.

4. Develop the institutional capability of SOMIVAC and of PIDAC through the provision of long-and short-term technical assistance, training of staff, construction of staff housing, office buildings, operating costs, staff salaries, materials, transportation requirements and equipment.

5. Conduct three major studies to define the resources of the Lower Casamance, examine the feasibility and design of selected activities in the region and investigate the health problems and potential programs for the region.

C. Execution of the Project

The project as planned involves three ministries (Rural Development, "Promotion Humaine" and Public Health). Responsibility for the different elements of the project is as follows :

<u>Organization</u>	<u>Project Function</u>	<u>Elements of Project:</u>
SOMIVAC	Management and Planning	Infrastructure Studies Training Technical Assistance
SOMIVAC/PIDAC	Agricultural Extension	Extension Small dams Storage facilities Training On-Farm tests Seed multiplication Agricultural credit Technical assistance Adult literacy (with "Promotion Humaine")

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<b>ISRA</b>	<b>Research</b>	<b>Infrastructure</b> Agronomic research Plant protection Training Technical assistance
<b>Public Health</b>	<b>Health</b>	Health surveys Rural health services Training Technical assistance

SOMIVAC is the primary implementing agency, being responsible for the activities in its own direction, the PIDAC program, the studies program, and all construction activities. The Project Paper concluded that SOMIVAC would be able to handle the procurement required under the project and that host-country contracting would predominate. USAID was primarily to have monitoring responsibilities, although occasional procurement would be undertaken if requested in writing from SOMIVAC.

Project implementation planning was overoptimistic in its assessment of SOMIVAC's capabilities and of implementation timing. Much time and effort was required to complete the procurement planning, and the procurement difficulties impeded implementation since SOMIVAC did not obtain from the central administration in Dakar sufficient administrative and financial authority to effectively implement and direct the project. Given the problems, SOMIVAC asked USAID to play a major implementation role which in turn greatly increased the demands on the USAID Project Manager. USAID had difficulty responding to these demands since the original project manager left the project after less than a year, and then the project was managed for six months first by a temporary project manager and then by the USAID Program Office in Dakar. It was not until June 1980 that USAID project management problems were resolved and USAID was able to respond fully to SOMIVAC demands for implementation assistance.

## II. Summary of Current Project Status

### A. Introduction

Although the Project Paper was approved in July 1978 and a Grant Agreement signed in August 1978, the project did not really get underway until nearly a year later, at the beginning of the 1979-80 crop year. Thus, the project has been in operation only during two crop years (1979-80 and 1980-81). A serious drought in 1980-81 reduced crop yields and production to very low levels so that it is not possible, at this time, to determine or identify quantitatively any increases in production due to the project. It is however possible to identify major improvements in project implementation over the last year following the arrival of a USAID project manager. With the continuation of this improved implementation it appears that the project can achieve planned outputs although a two-year extension will be required to compensate for the slow start.

### B. Summary of Progress to Date

Implementation progress, as of the time of the evaluation, is summarized below using the project elements described under I.B.

## 1. Increase Agricultural Production

- 49 extension agents of a total of 70 planned for this year are on the job.
- 2 small salt intrusion dams are under construction. It is expected that four of the 20 planned will be built this year.
- USAID is providing ISRA with the services of an agricultural research station superintendant at Djibélor. Three of a total of 5 planned long-term participants are in the U.S. studying for the M.S. degree and two participants have been sent for short-term training courses. Four vehicles have been provided to ISRA, and equipment totalling \$50,000 in value had been purchased as of March 31, 1981.
- An area of 100 hectares near Koudoubé has been chosen provisionally as the site for the seed farm. Land is being prepared for the seeding of 15 hectares of improved varieties of seed rice and 5 hectares of seed corn this year.
- A consultant from Mississippi State University assisted in drawing up specifications for the seed processing equipment and buildings.

## 2. Health and Literacy Programs

- The health program is still in the implementation planning stage, and the literacy program is just starting to be implemented.

## 3. Agricultural Credit

- The GOS has suspended all medium-term agricultural credit for a period of five years. Production credit to purchase fertilizers and seed is available from GOS funds.
- An AID consultant made a study in 1980 of the credit situation in the project area. USAID/Dakar is preparing a response to a series of questions posed by AID / W. following receipt of the consultant's report.

## 4. Develop the Institutional Capacity of SOMIVAC and PIDAC

- USAID is providing SOMIVAC a long-term planning advisor and PIDAC two long-term agricultural technicians. An English language teacher is training SOMIVAC, PIDAC and ISRA employees. In addition, short-term technical assistance has been provided for literacy, agricultural credit, seed farm planning, evaluation methodology and training of extension trainers.
- Two persons from SOMIVAC and 1 PIDAC have completed long-term training (two of which are to the B.S. degree) in agricultural economics. Six additional SOMIVAC employees and 2 PIDAC employees are in the U.S. studying for a B.S. or M.S. degree in agricultural sciences. One long-term participant for SOMIVAC and 3 for PIDAC remain to be chosen. In addition, 2 SOMIVAC and 3 PIDAC officials have gone for short-term training courses.

- The invitations for bids are being prepared for the construction of offices and housing for SOMIVAC in Ziguinchor and for ISRA at Djibélor.
- Two vehicles have been purchased for SOMIVAC and 12 for PIDAC, as well as office equipment and supplies for both organizations.
- The project has provided nearly \$ 1 million in operating costs for PIDAC since June 1979.

#### 5. Major Studies

- Harza Engineering Company International has been contracted since early January 1981 to do a comprehensive study and inventory of the physical and human resources of the Lower Casamance. The objective of the Harza contract is to develop a master plan for agricultural development of the Lower Casamance. The amount of the contract is \$3.042 million . Their first quarterly report covering the period January 15 - April 15, 1981 was recently submitted to SOMIVAC and USAID.
- Dr. Samba Diallo, University of Dakar, is directing, with the re-regional office of Grandes Endemies in Bignona, a health survey of the area affected by the Guidel anti-salt barrage. The study initiated in April 1981 will cost 35 million F CFA and is expected to take four years to complete.

#### C. Project Setting

##### 1. Assessment of Development Potential

The Project Paper presented what in retrospect appears to be an overly optimistic view of development potential of the Lower Casamance. The Project Paper emphasized the comparative advantage for rice production of the Casamance Region relative to other regions of Senegal because of (1) river basin lands suitable for irrigated agriculture, (2) high rainfall and substantial sweet water run-off, (3) a good soil base of heavy clays adapted to rice, and (4) a long tradition of rice culture. This assessment downplayed climate (the running 10 year average shows a highly significant decrease in total rainfall and a shorter duration of the rainfall period), water availability and soils as constraining factors to agricultural development.

Studies for the Master Plan for Rural Development of the Casamance (SOMIVAC, 1978), for development of several anti-salt barrages, and of drought cycles in recent years have established a new perspective on the natural and environmental constraints to increased agricultural production, particularly the expansion of irrigated rice production. To increase production, soil and climatic constraints which set an upper limit on how much can be produced per hectare must be recognized and measures taken to alleviate or modify them. Project implementation appears to be reacting to this new perception through crop diversification and accompanying research and development efforts on high yielding varieties adapted to different soils and climatic conditions. Project implementation should continue this research,

demonstration and adaption process and the indicators for goal and purpose achievement should be correspondingly reassessed as recommended below to better measure achievement within the context of this new understanding of development potential in the Lower Casamance.

## 2. GOS policy

The Government of Senegal policy for the rural sector has the following priority objectives :

- (a) development of food crops with a view to gradually increasing the percentage of domestic production to meet Senegal's basic food needs;
- (b) stepping up and diversifying agricultural production while increasing the value of agricultural exports by further processing, thus deriving the maximum possible benefit from the comparative advantages offered by the sector;
- (c) encouraging farmers to accept more responsibility by providing them with extension services and training in cooperative organization, so as to enhance their capability to manage their own affairs; and, consequently,
- (d) increasing the incomes of farm families and improving the quality of life in the countryside.

Following a stagnation in agricultural production and exports, the GOS implemented a Plan de Redressement in 1980 relating to both the structure and very nature of State intervention. The key objective of the reform is to raise the level of involvement among farmers in order to limit the role of the State to that of providing incentives and technical guidance, and thus, to reduce the cost of State intervention.

The basis of this reform is summarized as follows :

- (a) a marketing and producer price policy designed to promote production of foodstuffs and agricultural exports ;
- (b) a reorganization of the national agencies and regional societies for rural development with a view to decentralizing their management, reducing their cost of operation, and increasing their efficiency;
- (c) a reorganization of the distribution of seeds and other inputs and an overhaul of input prices ;
- (d) rectification of the member accounts of cooperatives and a restructuring of the agricultural credit terms and conditions with the collaboration of Banque Nationale de Developpement du Senegal (BNDS);
- (e) reorganisation and improvement of the procedures for collecting and weighing groundnut crops, now entrusted to cooperatives and oil mills;
- (f) encouragement of private initiative in the marketing field;

- (g) creation and development of village sections within the cooperatives;
- (h) orientation of agricultural research on global farming systems in conjunction with the development agencies.

The successful implementation of the Casamance Regional Development Project will promote both the planned reforms and the rural sector objectives of the Government. However, the reform has yet to affect the project. Particularly important is the lack of an administrative reorganization which would improve SOMIVAC operations by decentralizing management, reducing operating costs and improving efficiency. Similarly, a credit program has not been restructured and reinstated, and self operation of village farmer organizations (groupements) and conduct of farming systems research are just being initiated. The implementation of the planned reforms will greatly assist project implementation. In fact, many of the project recommendations regarding improved administration, management decentralization and greater village-level responsibility for development activities are also stated GOS reform objectives.

### 3. USAID Strategy

As presented by the Country Development Strategy Statement (CDSS) FY83, the USAID agricultural program will address four main targets :

- (a) the progressive decontrol and commercialization of rural production ;
- (b) the development of more effective agronomic practices ;
- (c) the increase in cultivated land area ;
- (d) the improved management of soil and water resources .

Although the Casamance Regional Development Project addresses all these targets, the lack of or slow implementation of certain project components has inhibited progress towards these targets. PIDAC officials at all levels present their development objective as one of progressively moving authority for agricultural development to the groupements, but the main vehicle for executing this policy objective, functional literacy, has not yet begun. Similarly, the evaluation found a lack of project resources at the village level - extension agents lacking logistical and technical support, and supporting services lacking for equipment repair, seed storage, veterinary care, water management, etc. In spite of stated GOS and USAID policies, project implementation still appears entrenched in a traditional operating style of centralized management, and of technical assistance, training and project inputs concentrated in the central administrative structures of SOMIVAC and ISRA rather than in providing technical services directly to the farmer. This current imbalance arises not from project design but from varying implementation progress among project components. The correction of this imbalance by stressing implementation of farm-service oriented activities should be a major management objective during the next year.

With regard to intensification and diversification and the establishment of more effective agronomic practices, the project design appears adequate and implementation is moving forward in improving agricultural research through farming systems research, diversification of crops and refining of technological packages. In agricultural extension, PIDAC agents are providing technical inputs much desired and demanded by farmers, although agent effectiveness needs to be increased through better logistical and technical support. The supply of timely and reliable inputs is an area of concern, partially because of continuing problems

with administration of the national programs for input supply and credit. Credit is an important area and development and implementation of the planned project credit component is needed.

The project is presently increasing the cultivated land area more in upland areas than irrigated rice areas, due to the drought conditions in recent years, availability of short-cycle corn and upland rice seed, and technical difficulties in expanding irrigation. Current planning activities under the Master Plan and project studies for anti-salt intrusion dams should provide further information for directing project efforts to increase cultivated land area.

The area of effective resource management is one being addressed by project planning and research activities but for which a village-level action program has not been developed. This is an area which should be better addressed by PIDAC. The PIDAC rural works division is developing new small anti-salt dikes and renovating several existing dikes and has constructed several wells to assist vegetable production. These activities should be reoriented away from PIDAC directed rural works towards providing technical assistance to groupement programs of water management and rural works as soon as groupements develop the capacity to direct such activities. This reorientation would be in line with the Project Paper and GOS and USAID policy and should be encouraged by project management.

In general, the evaluation team has found the project as planned to be in line with GOS policy and USAID Development strategy, but, because certain planned aspects are not yet being implemented, these policy objectives are not currently being realized. A conscious management decision to emphasize decentralization and village-level services is needed and project resources for technical assistance, training, operating support, etc. need to be directed more explicitly at operational, field-level needs rather than central capacity building in the administrative structure. The positive aspect of implementation is that project beneficiaries, farm families throughout the Lower Casamance, are being assisted by project activities, are expressing confidence in PIDAC, and are demanding more extension services. The recommendations of this evaluation should help the project move towards meeting the demands and needs of the rural population while following GOS and USAID policy objectives.

### III. Evaluation Methodology

#### A. The Structure of the Evaluation

The project evaluation was designed and conducted as a joint SOMIVAC/ISRA/USAID activity. The terms of reference and team members for the evaluation were presented and agreed to in advance by SOMIVAC, ISRA and USAID. The evaluation team consisted of a core group who undertook the evaluation analysis and a participation group who were associated parttime with the evaluation. The core group consisted of ;

Benjamin Stoner	Project Development Officer	USAID/Dakar
Ousmane Sané	Chief of Sociology Division	PIDAC
Carl E. Ferguson	Agronomist	Consultant
Edward K. Tapsoba	Agricultural Economist	Consultant

The associated group consisted of :

Charles Steedman,  
Reiner Schillinger,  
Omar SARR,  
Paul Da Costa,  
Amadou Camara,  
Moctar Touré

Project Manager  
Director of DIEP  
Economist  
Agro-economist  
Director of DTO  
Director ISRA

USAID/Dakar  
SOMIVAC  
SOMIVAC/DEEP  
SOMIVAC/DEEP  
SOMIVAC  
ISRA/Djibélor

The project team was based in Ziguinchor for one month (June 3 to July 3, 1981) of which approximately two weeks were spent undertaking field investigation and two discussing project activities with the involved institutions working primarily with the associated evaluation group, but including two interim meetings with the top officials of SOMIVAC and an evaluation review with SOMIVAC and USAID on July 2nd at which the evaluation findings and recommendations were discussed. Following this review the final report was prepared in English and French for presentation at a meeting of the Project Regional Coordinating Committee on July 28, 1981.

The evaluation took place about 3 years after project authorization of July 27, 1978. However, because of the slow start of project implementation and effects of outside factors, including the drought during the 1980/81 cropping season, the project has not yet made measurable progress toward its purpose. As a result the evaluation concentrated on a clarification of the project setting and design and analysis of the implementation process including provision of inputs and level of output achievement.

The timing of the evaluation, during the latter part of the dry season and before the planting of crops for the 1981/82 season, limited the opportunity to observe crops in the field for the usual indicators of growth and performance, to see field demonstration plots and to observe the extension agents in action. Extension activities in preparation for the crop season, like farmer group training meetings on how to plant rice and corn in rows and how to spread fertilizer at the recommended dosage, had presumably already been done. This is a period when all preparations for the season should have been made, but in fact, most farmers had not yet received requested improved seeds, fertilizers, pest control chemicals, etc.

#### B. Evaluation Approach

The execution of the evaluation followed AID procedure and placed considerable emphasis on communication of methodology with the associated evaluation members and representatives of the cooperating institutions. Following a review of project documentation the evaluation team selected sample areas and villages (corresponding to PIDAC zones and sectors as listed in Annex 4) based on obtaining coverage of the different agro-ecological and socio-economic zones within the Lower Casamance. Approximately two weeks were spent by the core team, with occasional participation of associated team members, visiting four zones and six sectors in the Department of Bignona, and three zones and five sectors in the Departments of Ziguinchor and Oussouye. Meetings were held with groups of farmers in each sector and with PIDAC sector, zone and departmental agents. Through these field visits and interviews the core team assessed the project setting and clarified the project design in the form of a revised logical framework (Annex A) which after discussion with the

associated team became the basis for the detailed output analyses (Annex B). Each project output was analyzed, summarizing present achievement and examining contributions of planned inputs and of external factors in order to develop specific recommendations. These recommendations were discussed with SOMIVAC on June 29th, and SOMIVAC, ISRA and USAID on July 2nd. Following suggestions of these reviews, the final recommendations have been reorganized to present (1) responsiveness to needs of target groups and to GOS priorities, (2) conformance to AID policy and development strategy and (3) progress toward specified project targets.

### C. Clarification of Project Logical Framework

Following an assessment of the project setting the evaluation team attempted to clarify the project design in order to permit a clear analysis of implementation progress. The original Project Paper contained eight different logical frameworks - one master, three for each major institution, and four for each major component. In addition, several different indicators were provided in various parts of the Project Paper and in the Project Agreement and no interim indicators were established.

The revised logical framework (Annex A) maintains the original presentation of goal from the "master" logframe and presents a fourfold purpose that is a composite of the original logframes. The purpose is to : (1) develop an effective agricultural extension and credit system ; (2) establish health and literacy programs ; (3) strengthen agricultural research ; and (4) develop an effective regional rural development planning and coordination capability. The project outputs have been regrouped according to the purpose to which they contribute, and the inputs remain as originally presented.

When possible, the evaluation used the objectively verifiable indicators established by the Project Paper and Project Agreement. This was possible for all the output indicators except the number of farms working with PIDAC. The level of 5,000 farms presented in the logframe has already been surpassed by PIDAC. A new level of 10,000 was set, but measurement of this level is subject to considerable error because of problems of defining a farm unit in the Lower Casamance. This definitional problem should be addressed and a new target set by the SOMIVAC/DEEP evaluation unit when it becomes operational during the coming year. Indicators for the health service component will need to be specified by the redesign of this component now scheduled for October 1981.

Because of slow implementation progress and the effects of drought on recent agricultural production, the evaluation was unable to measure the progress toward project purpose or goal. The indicators at the purpose and goal level need to be reassessed to permit a better measure of accomplishment. This should be done in conjunction with the building of evaluation capacity within SOMIVAC/DEEP. The studies by Harza Engineering for the Master Plan for the Lower Casamance will clarify agricultural production potential and thereby facilitate assessment of existing productivity targets. The current measure of goal achievement based on rice exportation seems inappropriate because of unsure assumptions of consumption and socio-economic values and should be revised to a measure of rural income generation. The clarification of these indicators should be accomplished by SOMIVAC/DEEP during the next year with technical assistance from SECID and the Harza Master Plan study.

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#### IV. Summary of Recommendations

##### A. Project Administration

##### 1. Implementation and Management

##### Recommendation A 1

SOMIVAC should aggressively pursue the status of National Society (Société Nationale) which will enable it to enjoy more administrative and financial management autonomy. The USAID Project Manager should work with SOMIVAC on planning for this transition.

##### Discussion

Although the GOS reform plan (Plan de Redressement) has emphasized more decentralization and more delegation of authority at the local level, decision making process is still highly concentrated in Dakar. For example, commodity procurement and hiring of personnel are still subjected to prior approval by the office of Contrôle des Opérations Financières (COF) in the Centre des Etablissements Publics (CEP) of the Ministry of Finance. In addition, GOS regulations require competitive bidding for any commodity procurement order totaling over 3 million CFA. Such regulations have resulted in cumbersome and lengthy procedures which have, to a great extent, hampered SOMIVAC ability to secure needed project inputs and personnel on a timely basis (e.g., purchase of motorbikes for extension agents and office furniture and supplies).

Although SOMIVAC sometimes has been able to circumvent these regulations by obtaining waivers for direct orders (e.g., purchase of gasoline from TEXACO) and by letters from the Ministry of Finance certifying availability of funds, the problem is still a major concern for project administration and implementation. The Director General of SOMIVAC has expressed some optimism that the problem will be resolved in the near future with the assignment of a Commissaire du Gouvernement at the regional level with full authority for on-the-spot approval of procurement orders. According to the Director General of SOMIVAC, the Minister of Rural Development has encouraged him to rapidly move in this direction. SOMIVAC is expected to follow SAED's footsteps and change to a National Society status.

##### Recommendation A 2

Pending transformation to a National Society, SOMIVAC should take interim measures to speed up procurement through decentralization and use of local businesses where possible.

##### Discussion

Up to now USAID/Dakar has been involved in helping expedite commodity procurement. This should be perceived as a temporary short-term measure. Thus, GOS needs to move swiftly to grant more authority to SOMIVAC in accordance with Section 4.5 of the Grant Agreement. This Section states that to assure "sufficient administrative and financial authority to effectively implement and direct the Project... the Government of Senegal will submit, in a form satisfactory to AID a plan outlining the respective authorities of these implementing agencies". The evaluation team could not find such a plan.

## 2. Planning

### Recommendation A 3

SOMIVAC/PIDAC should work in collaboration with the USAID Project Manager to prepare a new project workplan incorporating program and budgetary changes arising from the evaluation. This workplan should be ready for final discussion and approval by SOMIVAC and USAID before the next meeting of the Conseil d'Administration for SOMIVAC in December 1981.

#### Discussion

The only workplan so far prepared for the project was in April 1979. Implementation has been based on this workplan supplemented by the annual budgets established by SOMIVAC/PIDAC according to Government budgetary requirements. The annual budgets solicit operating support from USAID, but have generally not been prepared in collaboration with the USAID Project Manager and therefore have not been entirely in line with project objectives. A more collaborative workplan and budget development process is required to assure that project implementation priorities are properly placed.

### Recommendation A 4

The planned five-year life of project will continue until August 1983 (with correction of the project assistance completion date - PACD - in the Grant Agreement). The project should be extended two years beyond the planned life to August 1985.

#### Discussion

This extension is required to permit the full life of project as designed, since project implementation did not get underway until approximately one year after the execution of the Grant Agreement and since implementation has been more complicated and slower than anticipated. The extension is also required to permit the provision of all project inputs and their utilization by the GOS implementing agencies. This extension is especially critical for the literacy, health, farm service, and credit components that are just beginning or have not yet started.

## 3. Evaluation

### Recommendation A 5

The next evaluation of the project should be in January of 1983.

#### Discussion

By January 1983, data for two cropping years (1981-82 and 1982-83) should provide sound basis for a thorough reassessment of project progress and performance. At the end of the current crop year (1981-82) SOMIVAC/DEEP and PIDAC should closely monitor and supervise data gathering by extension agents (i.e. number of farmers reached, average yield, production 4/ to make sure that the infor-

4/ See Annex B for more detailed information on the kind of data needed for a better appraisal of technological change taking place at the farm level.

mation collected is of acceptable quality. The data collection effort will be strengthened in the 1982-83 crop year by Purdue, SECID and Michigan State research units. These research units should be able to provide a better data base for use by the evaluation team by January 1983. It is hoped that at that time most of the recommendations would have been implemented and that the evaluation team will be in a better position to assess the extent of progress toward the project goal and purpose.

B. Village-Level Services

1. Extension Services

Recommendation B 1

Increase the number of PIDAC extension agents to 70 this year and plan additional increases while preparing the workplan in recommendation A3.

Discussion

Given the reduced number of extension agents with respect to the number of farmers to be reached and villages to be covered, the current number of 49 extension agents should be increased to 70 as originally planned. SOMIVAC should hire 21 more agents as soon as possible during the current year. A hiring mechanism should be devised to screen out those candidates who are technically unfit or who do not fluently speak local languages.

As vegetable production continues to increase and is perceived as an income as well as off-season employment generating activity, there is going to be a need for strengthening PIDAC extension and marketing divisions. This strengthening should focus on better organization of producers, rational planning of production over place and over time and improving commercialization of and market outlets for various products to respond to local demand. One vegetable production specialist (of an ITA level at least) should be hired to be responsible for the vegetable production section.

Recommendation B 2

Provide better logistical support to PIDAC extension agents.

Discussion

In order to properly function, extension agents should be provided with needed logistical support including means of transportation (motorbikes), office furniture and supplies, bags, boots and masks for insecticide treatment.

Recommendation B 3

Improve the technical competence of PIDAC extension agents by :

- establishing a periodic training program in the SOMIVAC and PIDAC training divisions with adequate training materials ;
- establishing a calendar for regular in-the-field supervision of extension agents and zone heads with the participation of department heads and technical support from relevant technical divisions of both SOMIVAC and PIDAC;

- establishing a more systematic testing of extension agents by SOMIVAC/PIDAC on a regular basis (once every year or every two years) to detect areas of weaknesses which will serve as a basis for training programs ;
- establishing an adequate training center for extension agents. The Guerina Center could be renovated by USAID for this purpose ; but a formal agreement should be signed with Promotion Humaine guaranteeing continued use of the center by PIDAC.
- progress in these areas should be reviewed periodically by the SOMIVAC/USAID quarterly project review meetings.

### Discussion

A test administered by DEEP to extension agents has clearly demonstrated that their overall technical competence is alarmingly low. For various reasons (see Annex B), extension agents have not been properly trained and on-site training material is lacking. A variety of actions are recommended to upgrade the level of technical competence of agents.

### 2. Agricultural Inputs and Credit

#### Recommendation B 4

Improve the provision of agricultural inputs by :

- accelerating the establishment of the PIDAC seed farm ;
- expanding production of seeds at the GP level ;
- accelerating the building and/or renovation of storage units at both zone and GP level ;
- in the interim period of uncertainties about SONAR's ability to deliver inputs, SOMIVAC/PIDAC should play a major role in helping move inputs quickly to farmers. Although this role should be perceived as a temporary remedy, there does not seem to be any other way of doing this under the present circumstances. For a long-term solution, private sector provision of inputs should be developed.

### Discussion

As of the end of June, very few farmers have received necessary agricultural inputs. The existing system has been ineffective in delivering seeds and fertilizers to farmers on time and in the quantity required (see Annex B).

#### Recommendation B 5

USAID should expedite approval of the special credit program and provide the technical assistance and/or studies necessary to properly design and initiate the program.

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## Discussion

The dismantling of ONCAD and the bankruptcy of SISCOA have disrupted the agricultural credit system of the entire country. The suspension in 1980 of medium-term credit for five years and the write-off of short-term outstanding debt in April 1981 by GOS have compounded the problem and added to the confusion of the current situation. But given that farmers of the Lower Casamance have generally been good loan repayers, the evaluation team feels that there is still a possibility for a special credit program to be successful in the area. This program should complement the new Government credit program and could include:

- A special short-term credit program to help farmers cope with weeding problems. The wide adoption of direct planting by farmers as a way of dealing with rainfall deficit has given rise to severe problems of weed control. Under current inputs and product prices, the cost of 15,000 F CFA/ha for herbicide may be profitable at the moment, if rice yield reaches two tons per hectare ;<sup>5/</sup> but should GOS decide to lower the level of input subsidy, the profitability of herbicides may become questionable. Thus, PIDAC should proceed with extreme caution in providing herbicides to farmers. This should be done on selective basis following a thorough economic analysis of individual farms. Also, environmental impacts should be assessed beforehand to avoid any likely undesirable effects on both animals and people. USAID should clarify as quickly as possible whether the use of some types of herbicides (and insecticides) impinges on U.S. regulations.
- Medium-term credit for small equipment and machinery at the village level. This is an area where credit is badly needed. USAID special credit funds could be used to provide farmers with corn shellers, corn and rice mills, and equip village wells with hand pumps to provide water for vegetable production. This medium-term credit should preferably be aimed at providing equipment which is labor intensive.

PIDAC should assume responsibility for the administration of the special credit fund. This credit should be provided only through village level groupements and should be closely coordinated with the literacy program now underway.

### 3. Other Village-Level Services

#### Recommendation B 6

PIDAC should initiate a program for developing village-level services. This program should work through the groupements and be closely coordinated with the literacy program.

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5/ Fertilizer price is 25 F/kg for both compound fertilizer and urea. But this price is subsidized at 75%. Rock Phosphate has been given free of charge to farmers. The farm gate paddy rice price is 51.5 F/kg. See Annex B for financial analysis regarding profitability of herbicide use under varying assumptions.

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### Discussion

Village level capacity for maintenance and repairs of various farm equipment and machinery needs to be developed. For example, local blacksmiths should be trained and equiped to service animal traction equipment already in place. A credit could be given to village artisans for establishment of workshops and procurement of equipment and raw materials. Also, the program of small storage units at village level for inputs and products should be expanded.

Other village level services which the project could support include the development of local management capacity to provide health services such as village pharmacies, training of village health workers, etc. PIDAC should develop a plan of work for these activities working with the USAID Project Manager and using short-term technical assistance if necessary.

### 4. Functional Literacy

#### Recommendation B 7

The literacy program should continue to move forward as planned. PIDAC should provide needed logistical support and other working materials, equipment and supplies to literacy agents as planned. The program should be closely monitored and evaluated at the end of the first year. On the basis of performance in the first year, additional agents should be added to expand the program in order to rapidly reach as many farmers and villages as possible.

### Discussion

The literacy program is just getting underway with a literacy program coordinator and 6 literacy agents working in PIDAC. The first local language training session is planned for September/October 1981 and will be for secretaries of the groupements. Classes for villagers will begin in six training centers in January 1983.

### 5. Health Services

#### Recommendation B 8

USAID should play a leadership role in the restructuring of the health program by providing technical assistance for the design as soon as possible. SOMIVAC/PIDAC should hire a health coordinator who will work closely with USAID at the design stage of the program.

### Discussion

The health services program has not been implemented due to problems with the original design and to policy changes in the USAID health program.

### C. Institutional Support

#### 1. Agricultural Research

##### Recommendation C 1

The agricultural research program of ISRA for the Lower Casamance should

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**include :**

- Applied research that focuses on further refining current technological packages according to various agro-ecological zones and cropping history of fields.
- Development and dissemination of technological packages that include other practices such as compost making and better utilization of manure.
- More emphasis on crop diversification by gradually introducing other crops such as soybean and nièbe according to soil aptitude.
- Research on small appropriate implements for various operations such as plowing and especially weeding.
- Economic analysis of technological packages to show the profitability of these packages under varying assumptions of input and product prices.
- Field demonstration to bridge the gap between research and development.

**Discussion**

Currently ISRA has 10 researchers including two French researchers. In addition, four researchers will be provided under SECID contract. Also, CILSS/FAO and Michigan State will provide one researcher each. Thus, by the end of 1981 ISRA will have 16 researchers at Djibélor. Five Senegalese are currently in the U.S. for training at M.S. level and ISRA is planning to send another one soon. Within two to three years ISRA should have 13 Senegalese researchers as compared with eight who are now working at Djibélor. It is clear that ISRA should reach the planned target of 15 researchers on board by the end of the project.

The technological packages developed and offered to the extension service by ISRA seem to be appropriate. If these packages are properly applied they should contribute to substantial increases in yield and production. ISRA has developed about 12 improved varieties of rice for use in different ecological zones. In addition, a high yielding variety of corn has been successfully introduced and should increase corn production substantially. Also, improved cultural and pest control practices have been described but are yet to be extended to farmers.

**Recommendation C 2**

Strengthen the SOMIVAC/ISRA Committee for Research and Development.

**Discussion**

This committee was created as a coordinating group to assure good research/extension liaison between ISRA and SOMIVAC. Thus far, it has not played an active role in reviewing and recommending agricultural research, field demonstrations and extension activities.

## 2. Development Planning and Coordination

### Recommendation C 3

Develop SOMIVAC/DEEP capacity for project evaluation as recommended by the Purdue consultant and establish appropriate mechanism to enable SOMIVAC/DEEP to develop terms of reference for study needs and project development using funds planned for this purpose.

#### Discussion

SOMIVAC/DEEP presently has a professional staff of 6 Senegalese and 2 expatriates. The division has undertaken several important project identification and design studies and worked closely with outside design and evaluation teams. Further development of the division's professional capability and a reorientation toward design of small locally-managed projects is needed.

### Recommendation C 4

SOMIVAC (with USAID assistance if desired) should try to get from the Government a clarification of its authority to coordinate all agricultural development activities in the Casamance. In the meantime, SOMIVAC should try to strengthen its coordination activities and investigate the possible use of formal agreements with other institutions for specific objectives. For example, a formal framework could be developed between SOMIVAC/PIDAC and ISRA for regular annual meetings to exchange information and experience, or between SOMIVAC/PIDAC and Promotion Humaine for better planning and coordination in the area of activities concerning women (e.g. vegetable production) and for the use of the Guerina Center for training of extension agents, etc.

#### Discussion

Public law establishing SOMIVAC (Loi No 76-64 of June 26, 1976) defined roles for the new organization that included the coordination of the rural development activities of various development agencies working in the Casamance. This coordination responsibility was not clearly defined and has not readily been accepted by other Governmental agencies. To consolidate and improve the efficiency of Government development activities as envisaged in the Plan de Redressement a clarification of SOMIVAC's authority is required. A clarification was also required in Section 4.5 of the Grant Agreement concerning project management. A clarification is first needed within the Ministerial Development concerning activities of Production Agricole, Eaux et Cooperation, SODAGRI, etc., and secondly concerning activities of other agencies like Promotion Humaine.

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Annex A

**PROJECT DESIGN SUMMARY**  
**LOGICAL FRAMEWORK**

Life of Project : 5 years  
From FY 78 to FY 82  
Total US Funding \$ 23.7 million  
Date Prepared revised 6/81

Project Title & Number CASAMANCE REGIONAL DEVELOPMENT (685-0205)

PAGE 1

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal : The broader objective to which this project contributes :</p> <p>Increase agricultural production and improve the quality of life in the lower Casamance.</p>	<p>Measures of Goal Achievement</p> <ol style="list-style-type: none"> <li>1. Rice exports from the Casamance increase to 20,000 mt per year by 1990.</li> <li>2. Infant mortality reduced by 50% by 1990.</li> <li>3. Local language literacy increased to 40% by 1990.</li> </ol>	<ol style="list-style-type: none"> <li>1. a. Regional production and marketing statistics.</li> <li>2. a. Regional health statistics b. Health surveillance survey</li> <li>3. a. Project records. b. Project evaluation.</li> </ol>	<p>Assumptions for Achieving goal targets :</p> <p>Local demand for consumption and security of rice is met and rice enters the commercial market.</p> <p>Donor community will continue financial support of development in the Casamance.</p> <p>Production is not severely limited by drought or other natural disasters.</p>

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**PROJECT DESIGN SUMMARY**  
**LOGICAL FRAMEWORK**

Life of Project : 5 years  
From FY 78 to FY 82  
Total US Funding \$ 23.7 million  
Date Prepared revised 6/81

Project Title & Number : CASAMANCE REGIONAL DEVELOPMENT PROJECT 685-0205

PAGE 2

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS.	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose :</p> <ol style="list-style-type: none"> <li>1. Develop an effective agricultural extension and credit system.</li> <li>2. Establish health and literacy programs.</li> <li>3. Strengthen agricultural research.</li> <li>4. Develop an effective rural development planning and coordination capability.</li> </ol>	<p>Conditions that will indicate purpose has been achieved : End of project status :</p> <ol style="list-style-type: none"> <li>1               <ol style="list-style-type: none"> <li>a. Increase yield of rice on 10,000 ha from 1.3 T per ha to 2-2.5 tons/ha.</li> <li>b. Increase yield of millet and sorghum on 1,800 ha from 0.86 per ha to 1.0 ton/ha.</li> <li>c. Increase yield of corn on 850 ha from 1.0 T per ha to 2 tons/ha.</li> <li>d. Increase yield of peanuts on 2,900 ha from 1.0 T per ha to 1.2 tons/ha.</li> </ol> </li> <li>2. For 100 villages a health service program is established and literacy in local languages reaches 40%.</li> <li>3. ISRA carrying out research on critical technical and socio-economic agricultural problems and developing recommendations implemented by PIDAC and accepted by farmers.</li> <li>4. Donors relying on SOMIVAC expertise for project planning and coordination and SOMIVAC undertaking rural development activities with other GOS agencies.</li> </ol>	<ol style="list-style-type: none"> <li>1               <ol style="list-style-type: none"> <li>a. Agricultural production statistics of SOMIVAC/PIDAC.</li> <li>b. Project evaluation.</li> </ol> </li> <li>2               <ol style="list-style-type: none"> <li>a. Project, PH and MOH records.</li> <li>b. Project evaluation.</li> </ol> </li> <li>3               <ol style="list-style-type: none"> <li>a. ISRA research reports.</li> <li>b. SOMIVAC/PIDAC reports.</li> <li>c. Project evaluation.</li> </ol> </li> <li>4               <ol style="list-style-type: none"> <li>a. Donor acceptance of SOMIVAC planning.</li> <li>b. SOMIVAC reports.</li> <li>c. Regional Development Committee reports.</li> <li>d. Project evaluation.</li> </ol> </li> </ol>	<p>Assumptions for achieving purpose :</p> <ol style="list-style-type: none"> <li>1. Provision of agricultural extension and credit services are an effective means of increasing agricultural production and are established in accordance with the economic situation, farmer needs and repayment capacity.</li> <li>2. GOS makes commitment to address rural health and literacy problems.</li> <li>3. Participants successfully trained and return to ISRA, and GOS continues commitment to and support of agricultural research in the Casamance.</li> <li>4. SOMIVAC will have sufficient GOS support to fulfill tasks and delegated authority to carry out its planning and-coordinating mandate.</li> </ol>

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**PROJECT DESIGN SUMMARY**  
**LOGICAL FRAMEWORK**

Life of Project : 5 years  
From FY 7<sup>a</sup> to FY 82  
Total US Funding \$23.7 million  
Date Prepared revised 6/81

Project Title & Number CASAMANCE REGIONAL DEVELOPMENT PROJECT 685-0205

PAGE 3

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><b>Outputs :</b></p> <p>1 a. Enlarged and logistically well supported extension staff of PIDAC.</p> <p>b. Technically competent PIDAC agents.</p> <p>c. Farmer acceptance of extension recommendations.</p> <p>d. Effective input delivery system.</p> <p>e. Effective credit delivery system.</p> <p>f. Small dikes for water and salinity control.</p> <p>g. Seed farm to produce seed of improved varieties of rice and corn.</p> <p>2 a. Improved rural health services.</p> <p>b. Availability of basic medicines.</p> <p>c. Improved literacy training in local languages.</p> <p>d. Selected technical materials in local languages.</p>	<p><b>Magnitude of Outputs</b></p> <p>1 a. 126 agents on board.</p> <p>b. 80% agents pass technical competence exam.</p> <p>c. 10,000 farms working with PIDAC.</p> <p>d. Yearly production inputs needs are delivered on time and in quantities required.</p> <p>e. 1,500 farmers participate in agricultural credit program.</p> <p>f. 20 small dikes constructed and up to 5 existing dikes renovated and maintained.</p> <p>g. 100 hectare seed farm producing improved varieties of rice and corn.</p> <p>2 a &amp; b. (To be specified in design of health sub-project.)</p> <p>c. 36 literacy agents working and have trained 3,000 villagers.</p> <p>d. A minimum of 10 technical items prepared in local languages.</p>	<p>1. Annual and Quarterly Reports of PIDAC. Project evaluation.</p> <p>2. Reports on Health Project. Reports on Literacy Program. Project Evaluation.</p>	<p><b>Assumptions for achieving Outputs :</b></p> <p>1 a. PIDAC can attract agents and other staff.</p> <p>b. Adequate training programs are provided to agents.</p> <p>c. PIDAC enjoys trust of farmers.</p> <p>d. PIDAC receives all production inputs requested and continues to be responsible for their delivery to farmers.</p> <p>e. A working relationship among BNDS, SONAR and SOMIVAC/PIDAC is developed.</p> <p>f. The problem of water and salinity control continues to be a major concern.</p> <p>2 a &amp; b. Villagers are willing and able to support basic health services.</p> <p>c &amp; d. Sufficient and effective trainers can be found and village interest sustained.</p>

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Life of Project : 5 years  
From FY 78 to FY 82  
Total US Funding \$ 23.7 million  
Date Prepared revised 6/81

Project Title & Number CASAMANCE REGIONAL DEVELOPMENT PROJECT 685-0205

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Outputs :</p> <p>3 a. Larger and better trained research staff at ISRA. b. Improved technological packages. c. Effective liaison between research and extension.</p> <p>4 a. A well-trained professional staff at SOMIVAC. b. Resource inventory made. c. Plan for resource utilization. d. Feasibility studies and design of development projects. e. Evaluation and development activities and inputs. f. Improved coordination with other development agencies.</p>	<p>Magnitude of Outputs</p> <p>3 a. 15 researchers on board and trained to M.S. or higher level. b. 5 new rice varieties developed and technical packages tested in field trials. Testing also being done on other crops. c. Joint ISRA/SOMIVAC/PIDAC reviews of technological packages and joint undertaking of applied research.</p> <p>4 a. 33 person-months long-term training and 25 person-months short-term training. A functioning documentation center. b. Master Plan Phase I completed and accepted by SOMIVAC and USAID. c. Master Plan Phase II completed and accepted by SOMIVAC and USAID. d. Final design of 3 projects. e. Annual project evaluation. f. Inter-service reviews of development activities by the Regional Coordination Committee</p>	<p>3. Annual and special reports of ISRA/Djibelor. Project evaluation.</p> <p>4. Annual and other reports of SOMIVAC. Reports of Regional Development Committee. Project Evaluation.</p>	<p>Assumptions for achieving Outputs :</p> <p>3 a &amp; b. ISRA attracts and retains a good research staff at the Djibelor Station. c. ISRA and PIDAC continue to recognize the need for a close working relationship.</p> <p>4 a. Participants return to SOMIVAC and technical assistance contributes significantly to the strengthening of SOMIVAC. b &amp; c. Contractor's resource study provides information and recommendations adequate for resource utilization plans. d. Resource inventory is used by SOMIVAC for design of development projects.</p>

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**PROJECT DESIGN SUMMARY**  
**LOGICAL FRAMEWORK**

**Project Title & Number** CASAMANCE REGIONAL DEVELOPMENT PROJECT 685-0205

**Life of Project** : 5 years  
**From FY** - 78 **to FY** 82  
**Total US Funding** \$ 23.7 million  
**Date Prepared** : revised 6/81

PAGE 5

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><b>Inputs :</b> <b>U.S.A.I.D.</b> (\$23.7 million)</p> <ol style="list-style-type: none"> <li>1. Technical Assistance.</li> <li>2. Training.</li> <li>3. Commodities.</li> <li>4. Construction.</li> <li>5. Studies.</li> <li>6. Agricultural Credit.</li> <li>7. Operating Support.</li> <li>8. Special Projects.</li> <li>9. Inflation and contingency.</li> </ol>	<p>Implementation Target (Type and Quantity) :</p> <ol style="list-style-type: none"> <li>1. 40 person years of long-term and 5 person years of short-term technical assistance for \$ 3.6 million.</li> <li>2. 64 person years of long-term and 14 person years of short-term training for \$ 1.3 million.</li> <li>3. \$ 1.8 million for commodities.</li> <li>4. \$ 2.9 million for construction.</li> <li>5. \$ 6.0 million for studies.</li> <li>6. \$ 1.25 million for agricultural credit.</li> <li>7. \$ 4.2 million for operating costs.</li> <li>8. \$ .4 million for special projects.</li> <li>9. \$ 2.3 million for inflation and contingency.</li> </ol>	<p>Project records.</p>	<p>Assumptions providing inputs</p> <p>All inputs are provided as planned. Institutional capacity exists to absorb and properly use project inputs.</p>

### Project Output Analysis

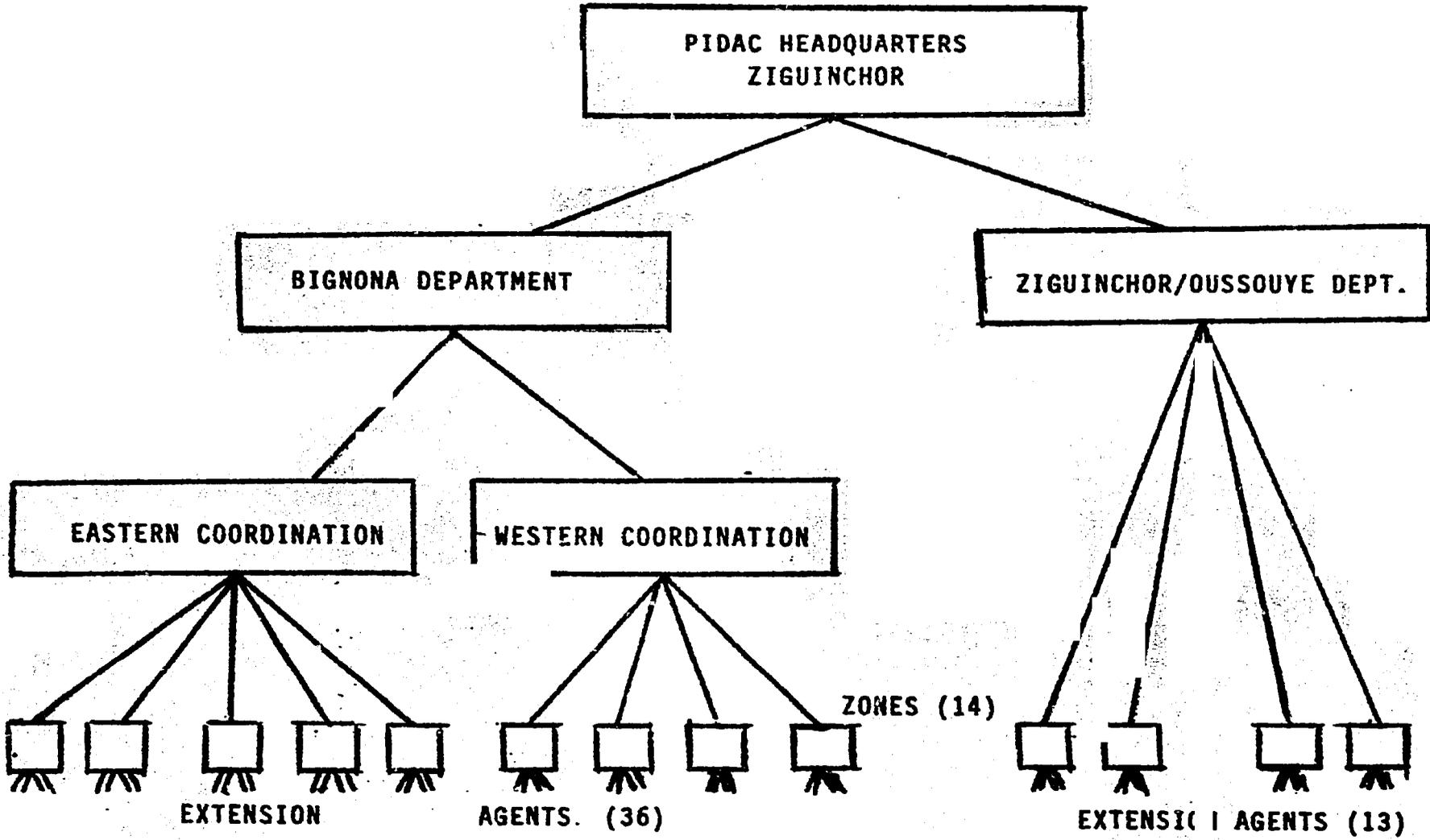
This annex contains an analysis of progress toward the achievement of each of the outputs presented in the project logical framework (Annex A). The analyses present a summary of present achievement, an examination of planned inputs, external factors and assumptions effecting achievement, and conclusions and recommendations. This is the analytical base for the summary recommendations of the Evaluation Report. The analysis of outputs is arranged by corresponding purpose: (1) develop an effective agricultural extension and credit system, (2) establish health and literacy programs, (3) strengthen agricultural research, and (4) develop an effective regional rural development planning and coordination capability.

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FIGURE 1.

ORGANIZATION OF PIDAC EXTENSION SERVICE



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## 1. Development of an Effective Agricultural Extension and Credit System.

### a. Enlarged and Logistically Well Supported Extension Staff of PIDAC.

#### Present Status

Figure 1 shows the organization chart of the extension service of PIDAC. The overall extension service is under the responsibility of the head of the Extension Division at PIDAC's headquarters in Ziguinchor. At the level of the Department there are two extension heads reporting to the head of the Extension Division at headquarters; one for the Department of Bignona residing in Bignona and one for both the Departments of Ziguinchor and Oussouye, residing in Ziguinchor. Because the Department of Bignona is so large, it has been divided into two zones of Coordination (east and west) with two Coordination heads. The western Coordination head is also the head of extension for the entire Department of Bignona.

Each Department (or Coordination) is divided into extension Zones, headed by Zone Chiefs. At the lower level, the Zones are in turn divided into extension Sectors headed by extension agents working directly with farmers through village level farmer organizations, the Groupements de Producteurs (GPs).

Inputs are provided to individual farmers through the GPs. A membership fee of 1,000 F CFA is required for all members. This fee is paid either once in total or by installments over a number of years. Each GP (containing one or more villages depending on the size of the village) elects a five-member committee composed of a chairman, a secretary, a treasurer and two other members.

The number and distribution of extension staff are shown in Table 1.

Table 1

Number of Heads of Zones and  
Extension Agents of PIDAC by Department  
June 1981

	Bignona Department		Ziguinchor/Oussouye Department	Total
	Eastern Coordination	Western Coordination		
Number of Heads of Zones	6	4	4	14
Number of Extension Agents	21	15	13	49

## Annex B

Table 1 shows that as of June 1981, PIDAC had 49 extension agents in the field. The head of the Extension Division of PIDAC has expressed concern about the shortage of extension agents. According to him, 20 more extension agents are needed at this point to adequately cover the entire region of the Lower Casamance in the short run (i.e., 15 for the Department of Bignona and 5 for the Ziguinchor/Oussouye Departments). Thus, this year the extension network should have had a total number of 69 agents in the field. This figure corresponds approximately to the 70 agents that PIDAC has planned to have on board this year. In the medium or long run, the head of the Extension Division (Mr. Wane) feels that 45 additional extension agents (30 for Bignona and 15 for Ziguinchor/Oussouye) will be required if the extension service is to reach optimum effectiveness. Hence, for an optimum extension coverage, PIDAC will have to have 115 extension agents within two to three year period.

The original project paper <sup>1/</sup> anticipated that by the end of the project (i.e., 1983) a total of 126 extension agents would be on board at PIDAC. Clearly, at the current pace at which agents are being hired, it is unlikely that PIDAC will reach the target number of 126 agents.

In addition to the insufficient number of extension agents, the operation of the extension service is compounded by a lack of basic logistical support such as means of transportation, basic office furniture and supplies (tables, chairs, bags, envelopes, boots, masks for insecticide application, etc...). For example, of the 49 agents now in the field, 19 do not have molyettes, which further reduces their activities.

The lack of logistical support, especially office furniture and supplies, extends to heads of Zones as well. Moreover, 9 of the 49 agents were fired after only a few months of functioning, then hired back and reassigned to various locations. This has, to a greater extent, hindered the extension activities. In some Zones (i.e., Niaguiss and Sindian) the heads of Zones had to fill the vacuum left by fired agents and carry an extra work load, trying to generate basic information requested by headquarters (i.e., information on farmer's inputs needs, planned areas for various crops, number of participating farmers, etc...).

#### Reasons for not Reaching the Target of 70 Extension Agents in 1981 and for Poor Logistical Support.

The assumption of PIDAC being able to attract and retain the needed number of extension agents remains valid since 20 agents were recruited in 1980 out of about 1,000 candidates. Hence, the reason for not reaching the target number of 70 agents does not reflect the inability of PIDAC to attract extension staff, but rather a number of institutional constraints both internal and external to SOMIVAC. The decision to fire the 20 newly recruited extension agents, for example, originated from the office of the Prime Minister (N° 29/PM/SGG/DR in date of May 2, 1979).

<sup>1/</sup> Project Paper, Senegal - Casamance Regional Development Project (685-0205), AID/BAS-021, July 1978.

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Presumably this action resulted from the GOS policy of freezing the staff of public and para-public institutions. Apparently the GOS wanted to limit staff expansion to new civil servants coming out of various professional schools. After the dismissal of the 20 new extension agents, the Direction Générale de la Production Agricole (DGPA) of the Ministry of Rural Development sent 20 agricultural technicians (ATAs: Agents Techniques d'Agriculture) to SOMIVAC. Due to the demand for more staffing in a number of areas (both within SOMIVAC and PIDAC), only 9 of these 20 ATAs were assigned as extension agents.

In view of the acute shortage of extension agents, which was hindering extension effectiveness, SOMIVAC hired back 11 agents. Of those 11, 2 were assigned to the seed farm and 9 were reassigned in various extension sectors.

The reason for the lack of adequate logistical support for extension agents appears to be central administrative constraints in Dakar rather than in Ziguinchor. For personnel and most procurement matters SOMIVAC is required to get approval by the office of Contrôle des Opérations Financières (COF) within the Ministry of Finance. Another institutional constraint which has prevented PIDAC from providing adequate office furniture and supplies to field agents is that all procurement orders from PIDAC, PRS and MAC are centralized by SOMIVAC for a global purchase. Government regulations require competitive bidding for any purchase order exceeding 3 million F CFA. Procedures involved in such bidding are time consuming and have often if not always resulted in long delays in delivery of commodities, sometimes up to two years.

### Conclusions and Recommendations

In light of farmers enthusiastic support for and participation in PIDAC activities, it is of utmost importance that extension agents be recruited at the earliest date possible if funds are available. This should not be of a major problem since USAID provides most support costs for the agents. The current number of 49 agents should be increased up to the 70 agents originally planned for this year. By the end of the project, PIDAC should have at least the 115 agents that the Extension Division of PIDAC perceives as being critical for an effective extension program. As SOMIVAC receives new ATAs from DGPA, these could replace those extension agents hired on contract but only on a one-to-one basis and in-so-far as such replacement does not disrupt extension performance.

Regarding institutional bottlenecks which impede the timely delivery of various logistical support commodities, two alternative solutions are proposed. The first solution which is also our first choice, would consist of breaking up orders in smaller amounts and by project. This would avoid bidding procedures. More importantly, we recommend that any type of commodity which can be supplied efficiently by local small business (i.e., businesses located within Lower Casamance) be given first priority in those instances where sufficient know-how of the local entrepreneur has been demonstrated. For example, we have seen during our field trips in a number of large villages (i.e., Ounck), Zones and/or Arrondissement headquarters (i.e., Diouloulou) that there were qualified carpenters who can make good quality furniture at lower cost. These skilled workers,

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who are also farmers in most cases, should preferably be given priority in local contracts. The benefits of this approach are considerable. First, it will expedite timely delivery of commodities at lower cost. Second, it will create employment in the rural sector of Lower Casamance, and increase farmer off-farm revenue. Such employment and revenues could be taken into account in assessing secondary impact of the project on the local economy.

A second possible solution would be to bring the problem before the joint GOS/USAID Planning and Coordination Committee. Since GOS has placed Agriculture Development as its first priority, it should stand ready to alleviate institutional bottlenecks that impair the effectiveness and the efficiency of agricultural development agencies. This may be one way of testing the will and commitment of the GOS to bringing about decentralization of decision making and to delegate more authority to local development organizations. Since the GOS wishes to tighten control on the financial operations of various public agencies, especially in the aftermath of the failure of ONCAD and SONAFOR, it still could do so by establishing some sort of control mechanisms at the regional level. This would avoid over centralization in Dakar and eliminate lengthy communications and cumbersome procedures which ultimately impact in a negative way on the absorptive capacity of institutions in charge of project implementation.

### Vehicle Maintenance and Repair

Vehicle maintenance and repair will become an increasingly larger operating expense for PIDAC and SOMIVAC. At present all preventative maintenance including oil changes, tire repairs, and minor adjustments and repairs are done in private garages. The present PIDAC vehicle park consists of 4 trucks, 7 pickups, 1 GMC station wagon and 1 Peugeot Sedan; all purchased with USAID funds. The Project Paper foresees a total of 37 USAID purchased vehicles in SOMIVAC and PIDAC.

The Project Paper (Sec. 7-28) provides for the establishment of "a system for periodic preventive maintenance of all vehicles and equipment belonging to PIDAC. Repair services will be done by local private shops. AID will provide short-term consultants to assist in establishing the preventive maintenance system."

At present the Project Engineer oversees the PIDAC vehicle park with respect to preventive maintenance and vehicle repairs. However, with the expansion of the vehicle park and considering the extent of his other duties, there is a need to establish a preventive maintenance facility as described in the Project Paper. At present there are no facilities of any kind either for off-street parking of vehicles at night, or for doing the simple preventive maintenance tasks such as tire repair, changing oil, adding fluids, etc.

Another problem which is yet to be addressed adequately is that of driver training. We understand that many are poorly trained, lacking in driver skills and have little feeling of responsibility for their vehicles. Some do not read French and thus are handicapped in learning preventive maintenance procedures and schedules.

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Conclusion

Vehicle preventive maintenance and driver training needs to be strengthened. Since most of the vehicles are new or relatively new, the problem is not as acute at the moment as it will be later unless steps are taken soon to formally establish a maintenance section.

Recommendation

That the SOMIVAC review of the problem be accelerated, and a specific plan for vehicle preventive maintenance and driver training and supervision be developed and put into effect.

Small Farm Machinery

Farmer interviews brought out that many had small machinery that was not used because of lack of spare parts or need for minor repairs. The mechanics unit, foreseen in the Project Paper (p. 7 - 28), would train extension agents in the repair of small farm machinery. We understand that tool kits for the unit have been ordered but that plans and steps for establishment of the unit have not been made.

Conclusion

There is a need for a unit which would train extension agents and/or GP members in maintenance and repairs of small farm machinery.

Recommendations

That the mechanics unit described in the Project Paper be initiated.

b. Technically Competent PIDAC Agents.Present Status

Twenty-seven farmer contact agents (encadreurs) were given a written examination on June 19, 1981 by SOMIVAC/DEEP to obtain an objective evaluation of their individual technical and socio-economic knowledge. The test was designed to evaluate their grasp of the more elementary theoretical and practical knowledge needed to perform their duties and responsibilities such as how to determine the area of regularly and irregularly shaped fields, objectively determine crop yields, how to apply fertilizer at the required rate per hectare, etc. Only 8 (30%) of the 27 agents who took the test were judged by DEEP to have made a satisfactory grade.

Of the present group of 49 farmer contact agents, many of the older men have

had only eight or nine years of formal schooling, while some of the younger agents may have had as much as 12 years or more, including two years in an agricultural school.

Experience in Senegal and elsewhere has shown that formal schooling does not usually provide the farmer contact agents with the kind of knowledge and skills needed. Much of their training has been too theoretical and too general in content to enable an agent to carry out the specific tasks required in applying the improved technological packages at the field level. Consequently a training course of two months duration for the 30 new agents was carried out in 1979. In 1980 a refresher training course of six weeks duration was given to the 30 agents.

Our interviews with about 12 farmer contact agents and "Chefs de Zone" revealed that some of them were still lacking in such skills as how to measure the area of an irregularly shaped field and how to obtain objective yield measurements in a given field. These deficiencies can be overcome by organizing refresher training courses as recommended below. Plans for the construction of a center where training courses would be given are described below.

### Conclusions

The skills and knowledge of most of the farmer contact agents need to be upgraded and strengthened. In the past, training programs have not spent enough time in drilling and testing the agents on how to perform the specific tasks involved in transfer of the improved technological package, and in other phases of their work, particularly gathering and compiling yield and production figures. We also conclude that support of the agent by the PIDAC central staff in technical subject matter areas relating to his job should be improved.

The transfer and on-farm use of improved, tested technology is the major SOMIVAC/PIDAC activity in direct support of the project goal, Increasing Agricultural Production. The ability of the present PIDAC field staff to adequately carry out this function is in doubt, as evidenced by:

- the results of the recent test given by SOMIVAC/DEEP to 27 agents
- lack of adequate logistic and technical support of the farmer contact agents

### Recommendations

To overcome these obvious weaknesses in the extension program we recommend that:

a. Annual refresher training courses and testing continue to be given to all farmer contact agents and their zone chiefs. The training should focus on the specific tasks the agents are expected to perform during the next campaign. Such training would be particularly needed if modifications or additions to the technology package have been made.

b. Educational materials relating to the tasks of the agents and zone chiefs be regularly provided by PIDAC. These materials might be in the form of leaflets, manuals, charts and posters prepared using standard audio-visual methods and materials. PIDAC should provide the agents with a loose leaf notebook in which the "fiches techniques" and other material can be filed

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c. That PIDAC Agronomists and Extension Specialists visit the agents periodically to check on their work, answer technical and other questions the agents may have and see that they are provided with and use the educational materials and equipment needed to do their job.

Construction of a Training Center

Initially the training center was to have been located at Baila. The training center complex was also to include the offices and support buildings for a seed production farm.

Plans for the Center have had to be changed. It was impossible to find available land at Baila for the seed farm, and construction of a high tension line from Bignona to Baila proved to be both technically and economically unsound. Present GOS plans are to install the training center at Bignona. A site of about one hectare has been chosen by SOMIVAC/PIDAC and the necessary GOS administrative approval obtained for construction.

USAID and the Regional Engineer are reluctant to proceed with construction because of two major considerations: (a) a rural training center under the control of Promotion Humaine already exists at Guerina, a few kilometers from Bignona on the Ziguinchor-Bignona road, and (b) the site selected in Bignona does not have an area of land suitable for use in the field training of agents. The Guerina installation does have land suitable for training in land preparation, planting and cultural techniques as well as housing, classroom, dormitories and related facilities.

We believe that a training center is very important to properly train new agents and for their periodic retraining. The recent five-hour test given to twenty-seven field agents by the DEEP revealed that most agents require additional training, particularly in the field techniques and methods which they are expected to teach farmers. For example, only eight of the 27 tested made a passing grade in that part of the test covering field measurements and yield determinations. With respect to the overall results, only eight made a passing grade. The problem of agent competence was discussed above.

Further, it would be hard to justify establishing a new training center if the existing center at Guerina under the control of Promotion Humaine is indeed underutilized.

Conclusion

There is a need for a center for the training of new agents and zone chiefs and for periodic refresher training of agents already assigned to the Project.

Recommendation

SOMIVAC/PIDAC should try to arrange with Promotion Humaine at the Ministerial

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level for the use of the existing center at Guerina. The arrangement should include assurance that SOMIVAC/PIDAC will receive equal consideration with Promotion Humaine in scheduling the use of the Center. Some renovation and perhaps additional structures would be required. These costs would properly be charged to the Project.

c. Farmers Acceptance of Extension Recommendations.

Present Status

Table 2 shows a steady increase in the number of farm families (or households) and in the total number of farmers (active workers) working with PIDAC over the 1979-81 period. This table also reveals that the number of farm families and the number of active farm workers increased ten fold and about six fold respectively in a single year; between the 1979-80 and 1980-81 crop years.

Table 2

Number of Farm Families and Number of Active Farm Workers  
Participating in the PIDAC Extension Program  
From 1978-79 to 1980-81

	1978-79		1979-80		1980-81	
	Planned	Achieved	Planned	Achieved	Planned	Achieved
Number of Farm Families	-	1,117	936	1,667	1,459	16,322
Number of Active Workers	-	5,586	4,680	8,336	8,200	47,864

Source: SOMIVAC, Etat d'Avancement, Projet de Developpement Intégré pour la Basse Casamance, June 1981.

Table 3 shows that, as of December 1980, 278 villages were covered by PIDAC, reaching 208 GPs and a total of 47,864 farmers evenly divided between men and women.

Table 3

Number of Villages Covered and Active Workers  
Reached by PIDAC by Department  
in 1980-81

Department	Number of Villages	Number of GPs	Number of Farmers		Total
			Men	Women	
Bignona	193	121	18,443	19,063	37,506
Ziguinchor	51	53	2,681	2,408	5,087
Oussouye	34	34	2,705	2,565	5,271
Total PIDAC	278	208	23,899	24,035	47,864

Source: PIDAC, Rapport d'Activité du PIDAC, December, 1980.

It is generally agreed upon that the average number of active workers is about five<sup>2/</sup> per farm family. The large number of participating families in 1980-81 is due to a redefinition of the farm family based on, and adapted from a farm study in the Middle Casamance (PRS). The use of this definition has lowered the average number of active workers per family to 3 (instead of 5) therefore increasing considerably the number of individual families. The project anticipated that by the end of the project, 5,000 farm families should be working with PIDAC (see Logical Framework). It is obvious from the information above that the number of 16,322 farm families reached by PIDAC's extension service to date (i.e., year 3 of the Project) almost doubles that which was planned for the end of the Project (i.e., year 5).

PIDAC's performance in reaching a substantial number of farmers is quite impressive, especially when considering the difficult circumstances under which it has been operating, including lack of personnel, lack of logistical support, etc...

<sup>2/</sup> Project Paper, Casamance Regional Development Project, Senegal 685-0205, 1978. Also in PIDAC, Plan de Travail du Projet - Intégré de Développement Agricole de la Basse Casamance, April 1979.

But there is still a need for operationally defining a number of terms and specifying a number of objective criteria in addition to "number" of farmers reached if a meaningful measure of technological change at the farm level is to be obtained. For example, to date the definition of what a farm family really is and what an active farm worker means are still unclear at this point. Neither is it clear what a farmer working with PIDAC does that is different from what a "traditional" farmer does. The figure of 47,684 farmers does not tell much in terms of farmers' technical knowledge and/or technological progress in following extension recommendations: rate of adoption of various technical themes (planting in row, right density, right time) and rate of adoption and level of use of inputs (improved seeds, fertilizers, insecticides, herbicides, etc.).

In interviewing farmers and field agents it was clear that the number of villages, GPs and farmers currently handled by each agent is too large for effective extension work. According to field agents, for effective extension work, an agent should handle no more than 100 to 150 farm families. But Table 4 shows that the actual number largely exceeds that figure. In addition to the large number of farm families currently handled by each extension agent, the effectiveness of the extension program is seriously hampered by long distances between villages and by poor roads in some Zones especially in the rainy season. Thus, one concludes the current extension system is spread very thin and is not generating rapid technical progress of farmers. For example, the PRS which covers only one department with a total rural population of 135,054, has 134 extension agents as compared with PIDAC which covers three departments totaling 196,038 rural inhabitants with only 49 extension agents. <sup>3/</sup> This means that there is one agent for 1,000 people in the PRS Zone as compared with one agent for 4,000 in the PIDAC Zone.

<sup>3/</sup> Figures given by the Director of PIDAC.

**Table 4** Number of Extension Agents and Number of Farmers by Department  
PIDAC - 1980-81

Department	Number of Farmers	Number of Villages	Number of Extension Agents	Average Number of Farmers and Farm Families by Extension Agent	Number of Villages per Extension Agent
Bignona	37,506	196	36	1,042 (347) <sup>a/</sup>	5
Ziguinchor	5,087	51	7	727 (242) <sup>a/</sup>	7
Oussouye	5,271	34	6	879 (293) <sup>a/</sup>	6
Total PIDAC	47,864	278	49	977 (326) <sup>a/</sup>	6

<sup>a/</sup> Approximate number of farm families based on 3 active workers per farm family.  
Source: Same as Table 3.

Although farmers have been generally responsive to the extension work of PIDAC, their acceptance of extension recommendations varies from one region to the next and more specifically across ethnic groups. The degree of receptivity gradually declines from eastern Lower Casamance which is predominantly Mandingue and/or Diola with heavy Mandingue influence, to the western Lower Casamance (especially south of the Casamance River) which is populated by the more traditional Kasa Diola.

One of the measures of farmers' acceptance of extension recommendations is the increase in acreage cultivated in various crops over time. Table 5 shows planned and achieved acreage in major crops. Due to extension agent shortage, the extension effort was concentrated on rice (the main crop in the area), corn and peanuts. Given the difficulties encountered (late delivery of inputs and insufficient number of agents) performance is fairly satisfactory. Over the years, because of poor rainfall and salinity problems, total acreage of aquatic rice has been declining in favor of upland rainfed rice. From 1,026 hectares in 1978-79, total acreage of aquatic rice has declined to 853 hectares in 1980-81, while acreage of upland rice has increased from 1,342 hectares to 1,624 hectares over the same period. Farmers have been generally receptive to extension recommendations for early direct planting as a way of coping with insufficient rainfall and shortening of the rainy season.

Table 5

Area Cultivated in Major Crops Controlled  
by the Extension Program of PIDAC  
From 1978-79 to 1980-81

Crops	1978-79		1979-80		1980-81	
	Planned (ha)	Achieved (ha)	Planned (ha)	Achieved (ha)	Planned (ha)	Achieved (ha)
Rice	-	2,368	3,525	2,173	4,545	2,477
Millet/ Sorghum	-	19	2,371	21	3,043	620
Corn	-	38	462	113	594	986
Peanuts	-	1,789	3,393	1,736	4,353	1,654

Source: Planned figures from PIDAC, Plan de Travail, opt. cit.;  
Achieved figures from SOMIVAC, Etat d'Avancement, opt.cit.

A major breakthrough has been achieved in total area planted in corn. From 38 ha in 1978-79, total acreage planted in corn increased to 986 ha in 1980-81. Corn has been accepted even by those farmers who never grew it before. Because it is a short-cycle crop, corn matures faster than rice and is therefore perceived by farmers as a means of meeting food shortages which often occur towards the end of the growing season (i.e., before the rice crop matures). Corn is certainly to be a major diversifying crop in the years ahead.

Another diversifying agricultural activity which is rapidly expanding is off-season growing of vegetables. Thus, 17 ha were planted in vegetables in 1980-81 in 75 villages by 5,195 families.<sup>4/</sup> This activity which is currently almost exclusively carried out by women is very promising and may constitute one way preventing off-season migration.

The increase in quantity of inputs distributed is another indicator of farmers acceptance of extension recommendations. Table 6 shows quantity of mixed fertilizer more than doubled (from 329 tons to 685 tons) and quantity of urea increased almost three times (from 208 tons to 584 tons) over a two year period: 1978-79 to 1980-81. The free distribution of rock phosphate reached 981 tons in 1980-81. Quantities of improved and non-improved seeds distributed also increased dramatically over the same period as shown on the same table. Quantity of rice seeds, for example increased by 174 per cent in the same period of 1978-79 and 1980-81, while quantity of corn seeds went from zero to about 20 tons in 1980-81.

Table 6

Quantity of Fertilizers and Seeds Distributed  
by PIDAC in 1978-79 and 1980-81

Year	Compound Fertilizer (tons)		Rock Phosphate (tons)	Rice Seeds (tons)		Corn (tons)		Nlebe (kgs)
	Urea			Improved	Non Improved	Improved	Non Improved	
1978-79	329	208	-	?	45.56 <sup>a/</sup>			
1980-81	685	584	981	8.55	70.58	3.24	16.54	325

<sup>a/</sup>Quantity of improved and non-improved corn seeds were not specified.

Source: PIDAC, Plan de Travail, opt. cit. and PIDAC, Rapport d'Activité, December 1980.

<sup>4/</sup> PIDAC, Rapport Trimestriel, March 1981.

### PIDAC's Difficulties in Meeting Farmers' Expectations.

As was pointed earlier, farmers have been generally very receptive to the extension program of PIDAC. This overwhelming responsiveness is largely substantiated by the dramatic increase in the number of farm families currently working with PIDAC. That PIDAC now enjoys the trust of the farmers is no longer an assumption but a fact and we had the opportunity to judge it in our field trips. Thus, the question is whether PIDAC will have the capacity to respond to farmers' expectations. It seems at this point that the extension service is swamped by farmers' demand for various inputs. For example, SOMIVAC/PIDAC has been trying to import rice seed in order to have enough rice seeds to meet farmers' request. In addition, as of June 25, less than half of the quantity of compound fertilizer requested had been delivered and no urea had reached Ziguinchor.

Two major hurdles at this point are likely to slow down PIDAC's actions. First, the reduced number of extension agents as discussed above, and second, the shortage of improved seeds, especially rice seeds and late or non delivery of other inputs. The shortage of rice seeds is partly due to the disastrous effect of the drought of 1980-81, which resulted in poor yields and also because there has been a substantial increase in area actually planned for upland rice cultivation. The late delivery of compound fertilizer is in part caused by private truck owners distrust of SONAR based on past unhappy experience with ONCAD (i.e., late payment for services).

Another problem which may slow down expansion of corn acreage is the non-availability of corn shellers and corn mills. Farmers have consistently raised this problem as being a major concern. Regarding the expansion of vegetable growing, market outlets seem to be the major bottleneck.

### Conclusions and Recommendations.

In view of farmers overwhelming acceptance of PIDAC's extension recommendations, it is of paramount importance that both the problems of shortage of extension staff and the inadequate delivery of inputs be solved relatively quickly. Unless corrective steps are taken there is a real danger that the farmer confidence that PIDAC currently enjoys will suffer a severe setback.

In order to appraise the magnitude of technological change taking place at the farm level, one needs to know more than the quantity of inputs distributed.

Actual input use is more relevant information. The Extension Service should improve its data base by collecting data by crop on the following:

- (1) Number of farmers planting in rows and acreage planted in row (with right density).
- (2) Number of farmers planting in row and using improved seeds and acreage planted in row with improved seeds.
- (3) Number of farmers planting in row, with improved seeds and using fertilizers and corresponding acreage.

To collect such information it is obvious that PIDAC should have the needed number of extension agents. The Studies and Evaluation Divisions of PIDAC and SOMIVAC should assume responsibility and leadership in obtaining this information, if not on yearly basis, at least on bi-yearly basis.

Although an effort has been made by PRS <sup>1/</sup> to more clearly define a number of terms like farm family and farm unit, there is need for carrying out the same research in Lower Casamance because of differences in ethnic composition of the population. Such research should try to define as precisely as possible "the farm household" taking into account the following variables:

- (1) Decision making process with respect to production and disposition of output.
- (2) Relationship among household members.
- (3) Work force (i.e., number of "active workers") available by household and by cropping enterprise.

Assuming that Michigan State University's research contract with USAID becomes operational, the multidisciplinary research team at ISRA should be able to help SOMIVAC/PIDAC in collecting the above information. Various zones will have to be delineated taking into consideration ethnic groups, cropping patterns and agro-ecological conditions.

The expansion of corn production is likely to slow down unless a number of "down stream" constraints are removed including availability of corn shellers and corn mills at the village (or GP) level.

Although there is a substantial potential for expanding vegetable production the major constraining factor remains the availability of market outlets. Two specialists are needed to address this problem: one marketing specialist to investigate potential markets at the local level (hotels, secondary schools, the military, etc...). Contracts should be signed including prices and quantities of various products. The second specialist will be a vegetable growing specialist who will be in charge of provision of inputs (seeds, fertilizers and insecticides), and of production planning over time and over space to assure a smooth flow of products and avoid gluts and shortages. To the extent possible wells should be dug, or improved and equiped with pumps.

<sup>1/</sup> Baba BA, Contribution à une Analyse des Systèmes de Production et de l'Evaluation du PRS.2., 1979/1980.

#### d. Effective Input Delivery System

##### Fertilizers

As of June 22, 1981, only 190 tons of mixed fertilizer (6-20-10) of the 950 tons requested, had been delivered to the major distribution points in the project area. None of the 649 tons of urea ordered had been delivered and the request for 1679 tons of Taiba phosphate had been cancelled at the national level. Urea is purchased by international tender and as of June 25, the shipment had not arrived at the port of Dakar. The situation with respect to input delivery is shown below in Table 7.

The required amount of improved corn seed is on hand and will be distributed to the GPs in time for planting. However, the supplies of improved rice varieties are far from adequate to meet farmer needs since only 34 T of the 112 requested are now available. The need for 144 B 9 rice seed is especially acute since it is much sought after because of its short growth cycle, good yield potential and yield stability (resistance to unfavorable growing conditions).

Field project personnel interviewed were concerned that fertilizer deliveries might be too late for application on this year crop.

In the past, ONCAD was responsible for delivery of fertilizers from Dakar to the GPs. Last year (1980-81) ONCAD, using the few vehicles at their disposal and by contract with private truckers, delivered the quantities of fertilizer shown in the Table below. Although the fertilizer arrived at some GPs in time for application - since planting was delayed by the late arrival of the rainy season - some GPs reported that fertilizers arrived too late for use. An unknown quantity of fertilizer, unused from last year, is thus available for use this year.

With the dismantling of ONCAD in October 1980, the GOS assigned the responsibility for delivery of fertilizers to SONAR. Late delivery of production inputs has plagued the project since inception. We understand that private truckers have refused to transport fertilizers for SONAR this year unless they are paid in advance for purchase of fuel for their trucks and for handling charges. The project is endeavoring to assist in solving the fertilizer distribution problem by purchase of three trucks for use in final distribution of fertilizers and seed to the GPs.

Delivery of production inputs should be made during the dry season since many rural roads become essentially impassable after the rains begin. And too, late delivery may mean loss of timeliness in fertilizer application, or no application at all. Either of these conditions may result in substantial reductions in yields.

The following estimates of fertilizer needs for the 1981-82 campaign were prepared by PIDAC and passed to SOMIVAC on December 9, 1980:

1,500 T. Taiba Phosphate  
1,000 T. 8-10-27  
700 T. Urea.

Firm requirements were compiled in early 1981. Due to a shortage of agents caused by the release of 20 agents, fertilizer needs were in part based on the farmer fertilizer requests for the previous campaign.

### Herbicides

Control of weeds in rice, corn and millet by hand weeding is a laborous time-consuming task. If farmers generally change their planting method in the rain fed areas, as advocated by PIDAC, to planting in rows on flat land, the problem likely will become more acute.

Recognizing the increasingly serious problem of weed control in cereal crops, PIDAC installed last year a series of weed control demonstrations in some of the GPs using chemical herbicides. These demonstrations were generally successful and stimulated the interest of many farmers in this method of weed control. Demonstrations and field testing of herbicides will be continued this year. Unfortunately there is no provision in the project for credit to purchase herbicides and any farmer desiring to use this method for weed control will have to pay in cash. The cost is high, amounting to about 15,000 CFA per hectare.

ISRA recognizes that weed control research, covering both technical and economic aspects, is a high priority area and has requested the assistance of a U.S. specialist under the SECID Contract.

### Insecticides and Fungicides

Pesticides used by PIDAC are not furnished by the project. They are purchased by PIDAC using non-project funds. Application is done by, or under, the supervision of farmer contact agents or their supervisors, the Zone Chiefs, who have been trained in the use of pesticides and to operate the hand-powered sprayers and dusters. Another area of significant crop loss is the damage done to cereals in storage by insects and rodents. Chemical products for seed treatment of grain for human consumption and for seed have been ordered this year but have not been delivered to the project area. Since the order has to be approved by the National Contract Commission, the delivery date is uncertain.

The use of insecticides and fungicides are increasingly important elements of the extension program, although used in limited amounts at this time. USAID Project Management should determine to what extent AID regulations on the use of pesticides, and herbicides apply in this instance where the products are purchased using non-AID funds.

The pesticides which have been ordered for use this year are:

#### Insecticides:

Furadan 36  
Thimult 35 (liquid)  
Heptagranox 5  
Actellic 2%  
Bromopios

#### Crop or Seed

Rice (for testing only)  
Rice and corn  
Rice and corn seed  
Rice and corn seed  
Grain for human consumption

Herbicides:

Ronstar 250 CE  
 Ronstar 12 L  
 Lasso  
 Treflan

Kajntea rice  
 Aquatic rice  
 Corn  
 Peanuts

Demonstrations and  
 testing only

Animal Traction

The package of inputs was initially planned to include draft animals and animal drawn implements, where their purchase could be justified. These items were to be provided to eligible farmers through a medium-term credit program. That program came to a halt with the suspension by the GOS some months ago of all medium-term agricultural credit, for a period of five years.

With the increasing rural exodus, particularly of young people, there is an urgent need to develop and extend into practice farming systems and production technology that is more productive per man hour worked, and less demanding physically than traditional hand labor. The relatively widespread use of animal traction in the Middle Casamance indicates that at least under certain conditions animal traction is technically and economically sound in the Lower Casamance. Defining these conditions in the Lower Casamance is yet to be done.

Table 7Production Inputs Delivered

	Fertilizer (T)			Improved Seed (T)		
	Taiba Phosphate	6-20-10	Urea	Rice	Corn	Niebe <sup>1/</sup>
<u>1980-81</u> <sup>1/</sup>						
Requested	1,186	768	638			
Distributed	981	685	584	8.55	3.24	0.32
<u>1981-82</u> <sup>2/</sup>						
Requested	1,679	950	649	112	30	3.92
Distributed	0	190	0	34	30	0.10

<sup>1/</sup> From Rapport Annuel, SOMIVAC, Dec. 1980.

<sup>2/</sup> Figures provided by the Head of the Division of Cooperative and Commercialization of SOMIVAC. The figures for amounts distributed were correct as of 6/22/81.

## Conclusion

There is no effective system, either public or private, for assuring the availability of the factors of production - seed, fertilizers, pesticides and materiel - to farmers. If this constraint is not solved in the near future, yields of corn, rice and millet in the project area will be seriously affected. Moreover, farmer confidence in future PIDAC programs may be jeopardized. Since the production factors are essential elements of the improved technology package, their timely delivery and wise use must be given highest priority or else there is no possibility of obtaining the increases in production projected by the project, and in fact, no justification for the project.

## Recommendations:

a. The problem of provision of production factors - seed, fertilizers, pesticides and materiel - should be aired at the national level and action should be taken to formulate a policy which will assure the establishment of an effective system for timely delivery of production inputs. One possible solution, in the case of fertilizers, is give SOMIVAC the authority and the means to contract with private transporters for the delivery of the fertilizers to distribution points in the project area. SOMIVAC, using its own vehicles, could make final distribution to the GPs.

b. USAID project management should determine to what extent AID regulation on the use of pesticides and herbicides apply in this instance where the products are purchased using non-AID funds.

c. That the agricultural credit component of the project be implemented to provide medium term credit for the purchase of draft animals and related materiel, hand-operated cultivators and seeders, and possibly other small machinery. Credit for these inputs should be on a highly selective basis; limited to those exploitations which have the production potential required to pay back the loan.

## Construction of Local Storage Facilities

The project envisages the construction of 30 warehouses to serve the needs of all the GP's, and 10 at the Zone level. The GP warehouses are for storage of production inputs; seed fertilizer, herbicides, pesticides, and small materiel and for storage of seeds produced by members of the GP's. The size of the GP warehouses is 60 M<sup>2</sup> with a weight capacity of 50 tons.

The 10 Zone warehouses will be 150 M<sup>2</sup> in size with a weight capacity of 150 tons. In addition to storage of production inputs and materiel for delivery to the GP's, the Zone warehouses will also have two small offices for the Zone Chief and the supply agent ("Intendant").

It is our understanding that SONAR is responsible for delivery of fertilizer to the Zone warehouses and PIDAC for movement of these inputs to the GP warehouses. From that point farmers will take possession of the production factors under the supervision of GP officials.

Construction is much behind schedule as only five of the GP warehouses and none at the Zone level are under construction (at Oulampane, Katak, Elana, Santhjaba Manjack, and Kaguit). The first two were said to be about 80 percent complete.

There are probably multiple causes for the long delay in construction, but it appears largely to have been due to the time taken for SOMIVAC/PIDAC to prepare design specifications and get them approved by AID, and to AID and GOS contracting requirements.

Materials for the GP warehouses was purchased by USAID directly and construction is under the supervision of the Engineering Technical Assistant assigned to PIDAC.

Sites for four of the 10 Zone warehouses have been selected, bids received and a contractor selected. The contract is in Dakar for approval of the National Commission for Contracts.

### Conclusion

Lack of warehouse space both at the GP and Zone levels is a serious hindrance to the timely delivery of fertilizers and other inputs to farmers. Further, there seems to be lack of complete understanding between SOMIVAC/PIDAC and SONAR with respect to responsibility for delivery of inputs. We understand that SONAR believes they are responsible for delivery to the Zone warehouses, while some SOMIVAC/PIDAC officials' views were that SONAR is responsible for delivery to the GP's.

### Recommendation

In view of the critical need for storage facilities in the chain of distribution of production inputs, we recommend that bottlenecks be identified and construction of the facilities be accelerated.

e. An effective Credit Delivery System

Present Status

Credit is provided to individual farmers through the GP's. The chairman of the GP is responsible for both distribution of inputs to and collection of repayment from individual farmers. Thus, extension agents do not deal directly with individual farmers. This system is sound because it provides more responsibility to local level organizations and frees extension staff from an extra work burden.

Interest rate on short term loans for seeds was 25% a year, but as of this year annual interest rate on seeds will be adjusted downward to 12.5%. Interest rate on loans provided for fertilizers and medium term credit items (i.e. draft animals and traction equipment) is 7.7%. In addition, fertilizers have been subsidized at 75%. Rock phosphate has been provided free of charge as a means of encouraging farmers to use it.

Although repayment of loans has generally been good in the past, the situation has deteriorated over the past three years as shown in Table 8.

Table 8

PIDAC: Outstanding Loans, Value of Repayment and Arrears for Short Term and Medium Term Credit from 1978-79 to 1980-81.

Year	Total Value of Loans Outstanding (ST & MT <sup>a/</sup> ) CFA	Repayment (CFA)	Arrears (CFA)	Repayment Rate (%)
1978-79	33,419,814	20,648,754	12,771,060	61.7
1979-80	25,915,000	6,580,798	19,334,202	25.4
1980-81	n.a. <sup>b/</sup>	n.a	n.a	n.a

Source: Figure given by the Head of Cooperatives and Marketing Division of PIDAC.

<sup>a/</sup> ST = Short Term  
MT = Medium Term

<sup>b/</sup> Not available at this time.

Repayment rate dropped from about 62% in 1978-79 to about 25% in 1979-80. Although figures for last year's agricultural season are not available at this point, Mr. NDiaye (head of PIDAC's Cooperative and Marketing Division) feels that the repayment rate is certainly going to be worse than the preceding year. Repayment of short-term loans has generally been high, especially for seed probably because farmers have the choice to repay either in kind or in cash. In 1978-79 for example, 88% of seed loans were repaid as compared with 60% for fertilizer loans.

Medium-term credit is currently in total shambles. Farmers medium-term debt is not known with precision. Disorderly administration and provision of medium-term credit items have resulted in a number of farmers being over-equipped beyond their debt carrying capacity and economic soundness (e.g. Ounck, Djibidjione, Sindian). Also the suspension of medium-term credit program in 1980 has resulted in a number of farmers with incomplete animal traction packages<sup>1/</sup> (e.g., Diouloulou, Sindian, Ounck).

Medium-term credit lacks critical basic supporting services including supply of spare parts, repair shops, and adequate veterinary support. This has resulted in a substantial number of farmers who are not using their traction package because of worn out or missing parts. Another problem which has hampered the effectiveness of medium-term credit has been the ineffectiveness of the animal insurance program in replacing dead animals. In some instances farmers have waited for a year or more to be paid for dead animals and to date there are still many who have not benefitted from the insurance program.

In addition to the above problems, the lack of training of both draft animals and farmers has, in some zones (e.g. Niaguis), resulted in farmers not being able to properly use their traction package effectively. Unless corrective steps are taken there is a danger that farmer's confidence in animal traction may drift away. Timely delivery of other inputs has been also a major concern as was pointed out earlier (see section on "Effective Input Delivery System.").

### Institutional Constraints in Credit Provision

One of the main reasons why the credit system is in disarray at the moment can be explained by a number of actions taken by the government in reorganizing major public agencies in an effort to make them more effective and less costly. ONCAD was dismantled in October 1980 and replaced by SONAR (Société Nationale de l'Approvisionnement Rural). ONCAD had been in charge of distributing credit to farmers on a nation wide basis but was primarily concerned with peanut production. Over the years ONCAD has become a "crippled" giant. Mismanagement coupled with poor record keeping contributed to ONCAD ineffectiveness and brought about distrust on the part of farmers. Credit had been loosely distributed without any economic consideration and debt carrying capacity at the farm level. This had resulted in heavy rural indebtedness in some zones as was pointed out before.

SISCOMA, which has been manufacturing animal traction implements, has shut down and as a result new equipment and spare parts are no longer available.

<sup>1/</sup> In these zones some farmers had either traction equipment with no animals or draft animals with no equipment.

The newly established SONAR does not have the means to carry out its responsibilities in terms of moving inputs from Dakar to areas where they are needed. This explains the unusual delay encountered this year.

Because procedures involved in replacing dead draft animals by the Fonds Mutuel de Développement Rural are time consuming, potential beneficiary farmers have not been receiving prompt reimbursement.

Veterinary care has been lacking because procurement of various veterinary medicines has been subjected to cumbersome competitive bidding. This has delayed considerably the timely provision of veterinary care.

Poor training of both draft animals and farmers stems from the fact that extension agents themselves are not adequately trained.

The poor loan repayment rate of the last three years can be explained by the unusually poor rainfall this region has experienced for decades. The severe drought of 1980-81 has had disastrous effects on crops nation wide. This has prompted GOS to stretch out short-term outstanding debt over a five-year period. In an unprecedented action, GOS wrote off all outstanding short-term debt in April 1981. This has further compounded the repayment problem and added confusion as to what portion of short-term debt is written off and what portion remains to be repaid.

In addition GOS has suspended all medium-term credit operations for five years pending a general inventory of outstanding medium-term loans which should clarify individual farmer's debt position.

### Conclusion and Recommendations

In the wake of GOS reassessment of the overall agricultural medium-term credit policy there is not much which can be done in this area. But in the meantime a number of corrective steps should be taken to provide supporting services to those farmers who already have traction equipment including the following:

(1) Training of a number of blacksmiths in selected villages in manufacturing and repair of spare parts for traction equipment. These local artisans could be sent to Sédhiou or Kaffrine for short-term training. A credit mechanism should be set up to provide help for initial establishment of workshops.

In addition there is a need for upgrading extension agents' technical training in animal traction if farmers are to be better trained.

(2) A veterinary care program should be set up each year to provide basic health care to all draft animals. SOMIVAC/PIDAC should aggressively follow up with orders for needed veterinary supplies.

(3) SOMIVAC/PIDAC should establish an effective mechanism whereby farmers would get prompt reimbursement for dead animals. This may require designating one person to be exclusively responsible for following up reimbursement applications in Dakar with Fonds Mutuel de Développement Rural: FMDR.

## f. Small Dams for Water and Salinity Control.

### Present Status

The initial target was the construction of 20 small dams and repair of 5 existing dams for retention and control of fresh water during the dry season, and to act as a barrier against intrusion of salt water during the dry season. The 20 dams would control the water on an estimated 400-500 hectares of land in the small marigots, or about 20 hectares per dam.

On his arrival in December 1979, the Project Engineer found that the locations for the dams had not been selected and consequently no topographic surveys were available. Compounding this problem was the absence of any engineering equipment in SOMIVAC/PIDAC with which to make the necessary topographic surveys and prepare construction design.

Some 18 months after his arrival the needed equipment has begun to arrive. In the meantime, using borrowed equipment, the engineering section has completed topographic surveys for the first two dams. The engineer anticipates that four of the small dams will be completed in this calendar year.

Initially the small dams were conceived as simple water retention and control structures which would allow the exit of excess fresh water through the dam during the rainy season and prevent the inflow of brackish water. However, the findings of ILACO in their studies in the early 1970s on the reclamation of highly salty soils of the Lower Casamance show that these simple control structures may lead to disastrous results on certain soils. These soils, high in sulfides, undergo oxidation on drying which release sulfuric and other acids. The acids formed may drive the pH (a measure of soil acidity) to levels as low as 2-3. Such high levels of acidity put into solution certain elements, including iron, aluminum, manganese and magnesium, which if present above a certain level are toxic to rice.

ILACO found that the acidification process could be prevented by allowing an influx of brackish water during the dry season to keep the soil profile saturated with water. With the onset of the rainy season, the salty water and accumulated salts are reduced to tolerable levels by the flushing action of fresh water.

Whether a particular dam should be designed for a two-way flow of water, or simply a one-way flow, depends upon the nature of the soil on which the water is being controlled. This information is best obtained by a pedologic study and evaluation of the soils to be flooded, including laboratory analysis. The scale and level of detail of soil maps of the project area do not provide the information required. The engineer is very conscious of this problem and is endeavoring to find certain external indicators such as the kind of vegetation or appearance of the soil surface which would indicate if a particular soil would likely undergo acidification on drying.

### Conclusion:

An adequate soil study should be made of each dam site and the area controlled by the dam, to (a) aid the engineer in design of the dam and (b) provide guidance on

any special requirements for prevention of soil acidification, and (c) to use as a basis for choosing the crop varieties to be grown and possibly the amounts of fertilizer to use.

#### Recommendation:

SECID should provide the above services including the laboratory analysis under that section of their contract which allows for consultant services, if ISRA is unable to provide such services on a timely basis.

#### Construction of Water Wells

The Rural Works Division has constructed four water wells of a total of five requested under the special projects item in the Project Paper. These wells located at Diakene Diakola, Thionck-Essyl, Tendouck and Dombondir are used for irrigation of small vegetable plots during the dry season. We were told that they are not used for household water supplies.

The wells are from 8-10 M deep and 1.8 M in diameter. Water is drawn by hand in a bucket using a rope and pulley. The capacities of these shallow wells vary depending on the time of year and the amount of rainfall. The area irrigated by each well is about 0.5 hectares.

The average cost of the wells dug is about 350,000 F.CFA.

#### Recommendation

Use of the wells for production of vegetable crops should be monitored by project economists and agronomists to assist in the solution of any technical problems, and to determine if expansion of the shallow well construction program can be economically justified.

## g. Establishment of a Seed Farm

### Present Status

PIDAC has arranged for 100 hectares of land at Koudeube in the Bignona Dept. to be the site of the seed farm. An ISRA pedologist made a reconnaissance soil survey and found the area suitable for production of rice and corn. Soil samples were taken for chemical analysis at ISRA/Djibelor but the required chemicals to make the analysis have not yet been obtained. The laboratory analyses are not considered critical since the land has been used for rice in recent years. Corn will be planted on the better drained soils, and rice on the soils subject to flooding. However, there could be a problem of excess water on the corn land, since corn is highly sensitive to water-logged soils during any period of flooding following heavy rainfall of long duration. If necessary, the area reserved for corn might be protected by a small dike using mechanical equipment which will be available on the farm.

This year (1981-1982), 10 ha. of 144 B9 rice, a short cycle, good yielding variety will be produced. An additional 5 hectares will be seeded to IR8, and AIWA. Five ha. of corn will also be planted. Yields are projected to be 3T/ha. for paddy rice and 2T/ha. for corn.

Next year (1982-83) the planted area will be expanded to 50 hectares.

Designs for a seed-cleaning and testing facility are being prepared by consultants and equipment needs have been identified including preparation and issuance of PIO/Cs. A storage facility for the seed and for production inputs will be constructed. Until this facility is built, the zone storage facilities in Bignona will be used by the farm.

Although the seed processing equipment will most likely not arrive in time for use on this year's crop, this should pose no insurmountable problem since an adequate supply of labor is said to be available in a nearby village, and could be used for harvesting, thrashing and seed cleaning using traditional hand methods.

The site appears to be satisfactory with respect to soils, topography and labor supply but it is in a rather inconvenient location with respect to the rest of the project area. The farm is reached by an unimproved road some 8.5 km in length which intersects the new Diouloulou - Kafountine road. A bridge crossing a small drainage way traversed by the unimproved road will have to be rebuilt. This location likely will result in higher costs - and possibly delays during periods of heavy rainfall - for moving inputs to the farm and seed produced to other areas of the project than would have been the case if a more central location had been found.

Conclusion: Although considerably behind schedule because of the delay in locating a suitable site of the size desired, the first target of 20 ha of rice and corn should be achieved this year.

Recommendation: In view of the unfilled farmer demands for improved seed, particularly for rice, we recommend that installation of the farm facilities and equipment be given highest priority and that the responsible official(s) be alert for any bottleneck or avoidable delays.

## 2. Establish Health and Literacy Programs

- a. Improved Rural Health Programs, and
- b. Availability of Basic Medicines

### Present Status

The Project Paper presented a health activity which would develop an outreach program based on the existing system of PPNS's (Programme de la Protection Nutritionnelle et de la Santé). This is a program that organizes mothers into groups which are visited in the villages on a weekly basis and provided medical consultations, health education and nutrition demonstrations. The activity was to be implemented by the Ministry of Health through a special health education unit to be established under the regional health service. SOMIVAC would have participated in an ad hoc health service coordinating committee and PIDAC would have supported the activity by providing local language materials through the literacy unit.

This component has not been implemented. USAID judged the original design to be unacceptable and undertook to redesign the component with the technical assistance of a health specialist funded by the project. This redesign has not been completed, even though the project funded technical assistant has been working in the USAID Health Office in Dakar for nearly two years.

### GOS Health Policy

A fundamental aspect of the GOS health policy is to develop primary health care based on local participation. The three basic objectives of this policy are:

- a) improvement of the health of the rural population.
- b) creation of conditions for rapid development of preventative, curative and educational actions based on popular participation and support.
- c) the right of health for all.

The development of primary health services in this manner would complement and strengthen other forms of local organization developed within the framework of the communauté rurale. They would strengthen and extend to the village level the health services of government operated health posts, while avoiding the problems encountered by numerous village dispensaries that lack a technical support and medicine resupply system.

### Conclusions

The fact that many villages have organized and built dispensaries attests to their strong desire for health improvements. In every area visited by the evaluation team, villagers expressed a strong concern about health and a desire for improved health services. Within the context of the Casamance Regional Development Project, the original concept of developing local health services in conjunction with local language literacy

still appears to be a valid and promising approach. Literacy and local language health brochures could strengthen the technical and managerial aspects of the health program, while the desire for improved health services could provide a motivation for local language literacy.

### Recommendations

USAID should move forward to redesign the health component. The health component should be designed and implemented to address health and nutritional problems of the Lower Casamance and also to complement the literacy program and other actions that will strengthen local development organizations.

#### c. Improved Literacy Training

##### Present Status

The literacy training program is still in the pre-implementation stage of strategy planning and organizational development. The Literacy Program Coordinator began work with PIDAC late in 1979. During 1980 he worked on determining the target areas for starting the literacy program, defining a literacy strategy to maximize local interest and motivation, and undertaking a socio-economic study of the six villages where literacy centers are planned: Suel, Abenné, Kaguit, Djimande, Diagon, and Oukout.

Six agricultural agents (ATA's) were assigned to the Literacy Unit in January 1981 and have been trained by the Program Coordinator. Of the six agents, four will be Diola instructors and two Manding. Organizational seminars were held on literacy materials for the GP's and on an initial program to train the secretaries of the GP's who are already literate in French. Following the recommendations of these seminars, the Literacy Unit has prepared GP accounting documents in Diola and Manding and is working on additional materials. These early strategy and methodology development steps were aided by a short-term technical consultant (Belloncle, in December 1980) and a short-term training trip by the Literacy program coordinator to Mali in March 1981.

##### Literacy Strategy

The functional literacy component has maintained the general goals and orientation presented in the Project Paper, but changed the implementation strategy. The two-fold rationale for functional literacy is (a) to improve communication between the extension agency and the farmer, who in turn becomes more capable of expressing his specific needs vis-a-vis the Project's objectives, and (2) to enable the farmer to play a control role in the development process by giving him the knowledge and means of assuming direct responsibility for local development activities.

The implementation strategy for the literacy program presented in the Project Paper was to establish a Literacy Unit under the PIDAC Training Division with a Literacy Program Coordinator and three literacy technicians based in Bignona. The literacy agents were to be VG's who would be given a special two-month literacy training course, after which they would train villagers (GP members) for which they would receive a supplemental indemnity. With this strategy the program was to be active in at least 50 villages and include approximately 2,000 to 2,500 villagers after two years.

The present implementation strategy is to use fulltime literacy agents (specially trained ATA's), in place of the parttime VG's, as the literacy trainers. This strategy evolved after the hiring of the Literacy Program Coordinator and a reassessment of PIDAC implementation capabilities. The six literacy agents now working for PIDAC will train the secretaries of the GP's in September/October 1981, and set up the literacy centers in six villages to begin training 30 men and 30 women at each center in January of 1982. Plans for the extension of this program are not yet specified.

### Conclusion

With the current strategy and level of resources, the project will not achieve the stated end-of-project objective of 36 literacy agents and 3,000 villagers trained. The number of agents is no longer relevant since the project is now using fulltime agents rather than parttime VG's as planned. The current strategy will permit the training of about 720 villagers per year so that in two years less than half of the target number will have been trained, unless some sort of multiplier effect is assumed. The current approach appears appropriate and well thought out. One exception to this could be the plan to use 2 1/2 hour sessions, 4 days per week over several months, rather than six week-long sessions with one week on, then one off as used in Mali and recommended by Belloncle.

Project implementation has been constrained by a severe lack of inputs. The vehicle for literacy activities recently arrived but has been used primarily for other PIDAC activities; the literacy agents are still awaiting mobyettes; the office equipment and field materials have not been purchased. The effective start of the literacy program will require better logistic support and operational independence.

### Recommendations

PIDAC should push forward with implementation of the present strategy. Because of the vital importance of the literacy program to other possible village/GP managed development activities, the literacy program should be assured of operational support as planned in the Project Paper. This means:

- assuring that the Literacy Program Coordinator has access to the vehicle purchased for his use.

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- getting mobylettes for the literacy agents as soon as possible.
- purchasing office supplies (including duplicating equipment) and field materials.
- providing office support (i.e., local language secretary).

As the literacy program gets underway it should be closely monitored by SOMIVAC/PIDAC and by USAID to identify constraints and to determine how additional resources could be used to improve and expand the program as quickly as possible.

#### d. Selected Technical Materials in Local Languages

##### Present Status

The only literacy materials produced so far are the accounting documents for the GP's which will serve as the basis for training the secretaries of the GP's in September/October 1981. However, under the direction of the Literacy Coordinator the 6 literacy agents are working on additional materials that include a Diola glossary, a Manding glossary, a pamphlet on basic arithmetic, and brochures on agricultural problems.

##### Conclusions

Like the entire literacy program, the preparation of materials is getting started very slowly. Nevertheless, the project should be able to achieve the stated objective of 10 technical items prepared in local languages, assuming the planned inputs are provided - particularly typing and duplicating equipment and a local language secretary. The major question is whether 10 technical items will be enough to properly support the program; especially as additional village projects are developed.

##### Recommendations

Project management needs to assure the delivery of planned inputs to permit the proper operation of the material development activities. These activities, like other literacy activities, should be closely monitored and additional resources should be provided as necessary since the supply of well-prepared local language materials is fundamental to the success of the literacy program.

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3. Strengthen Agricultural Research

a. A Larger and Well Trained Research Staff at ISRA

Present Status

The Rice Research Station at Djibelor was created in early 1967 with FED and GOS funding. The objective of the station was to carry out rice research which would result in increased production. With assistance provided by Project 685-0205 funding, the scope of the research is being expanded.

Present Staff:

The present professional research staff consists of:

<u>Specialization</u>	<u>Nationality</u>
1 Agronomist/Soil Scientist	Senegalese
1 Agronomist (Plant Breeding)	Senegalese
1 Plant Pathologist	Senegalese
1 Sociologist	Senegalese
1 Economist	Senegalese
1 Agronomist	French
1 Entomologist	French

All seven of the research staff have at least completed 3rd Cycle Training (6 years of University level study with Thesis).

The general work of the research staff and budgets for research can be summarized as follows:

Rice Breeding - The genetic stock includes about 2,000 different entries under observation and selection.

Phytopathology - A budget of 5,000,000 F CFA is provided by USAID and CILSS. The objectives are (a) an inventory of rice diseases in the Basse Casamance, and (b) special studies of the rice disease "pyriculariose".

Entomology - A budget of 7,800,000 F CFA is provided by the GOS and CILSS. The objective is to study and to make an inventory of the insects and to rear in the laboratory the principal insects which attack rice and to formulate techniques and methods for their control.

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Weed Control - It is planned to study the physiology of the important weeds on rain-fed crops and on irrigated land.

Rice Production Systems - A budget of 17,000,000 FCFA is provided under the "Convention riz" with USAID. The objective is to develop improved systems of rice production in the Lower Casamance. The action undertaken consists of research on the following; cultural methods for aquatic rice, the use of small mechanized tools and the evaluation of other technology, both on the station and on farms. Also a program for research in soil chemistry and fertilization of ricelands is supported by a budget of 25,000,000 FCFA under "Convention riz".

In addition to research in the areas described above, ISRA is doing long-term research on corn, grain sorghum, and soybeans. Other areas of research largely still in the planning stage, include dairy production, pig raising, bee keeping, and poultry. These wide-ranging actions require that a multi-disciplinary team of research specialists be developed.

As a step toward developing a multi-disciplinary research team the following participant training programs are in progress or planned:

<u>Number</u>	<u>Specialization</u>
1	General Agronomy
1	Agricultural Engineering (farm machinery)
1	Entomology
1	Agricultural Station Management
1	Agronomy (weed control)
1	Soil Science (soil survey and mapping)
1	Micro-Economist

### Conclusions

Considering the present research and plans for training and development of an expanded research staff there is good reason to believe that the goal of 15 professional researchers will be reached.

In the socio-economic area ISRA is undertaking the development of a team for study of farming systems. The areas of socio-economic research include study of the means and methods of production, economic analysis of production systems and the rate of acceptance of the technology package by peasants.

All the above activities should strengthen agricultural research in the Lower Casamance. Research will be coordinated and systematized by the "Cellule de Recherche et Developpement" which coordinates the problems of development encountered by SOMIVAC with research undertaken by ISRA.

#### b. Improved Technological Packages

##### The present Package

ISRA is responsible for the development of the production technology used by the Agricultural Extension Division of PIDAC. This "package" is described in a series of leaflets ("fiches techniques") which are given to the farmer contact agents and their supervisors, the zone chiefs. In addition, training sessions are held to teach agents how to carry the various items and practices described in the "fiches techniques".

This technology package now includes the following:

- improved varieties of rice, corn and peanuts
- time and method of planting
- kinds, amounts and method of fertilizer application
- weed control methods, including use of herbicides
- control of insects and diseases
- use of animal traction.

At least a dozen improved varieties of rice, including rain fed, water table (riz de nappe) and aquatic rice, have been tested and found suited for farmer use in the Basse Casamance. Some of these varieties, such as IR-8, produce outstanding yields under optimum growing conditions, including timely planting, adequate water and weed control, and high soil fertility, but have limited resistance to soil moisture stress, diseases, low fertility or other unfavorable environmental conditions. Certain varieties, such as Ablaye Mano, Gambiaka and D52-39, have a degree of salt tolerance but their growth cycle is too long, particularly during years when the rains begin late and water supplies are limited. About 300 local varieties and lines have been identified and selection made from among them. A total of about 2,000 lines and varieties of rice are under observation and testing by ISRA.

A rice variety, 144B9, originating in the Ivory Coast has great yield stability under less than favorable conditions, and under good conditions is a heavy producer. Farmer requests for this variety jumped from a few tons for the 1979-80 crop year to 112 tons for the current campaign (1980-81). Unfortunately, only about 34 tons are available for planting this year. To make up the difference SOMIVAC is trying to arrange for the purchase of seed of a similar improved variety available in the Gambia.

## g. Establishment of a Seed Farm

### Present Status

PIDAC has arranged for 100 hectares of land at Koudeube in the Bignona Dept. to be the site of the seed farm. An ISRA pedologist made a reconnaissance soil survey and found the area suitable for production of rice and corn. Soil samples were taken for chemical analysis at ISRA/Djibelor but the required chemicals to make the analysis have not yet been obtained. The laboratory analyses are not considered critical since the land has been used for rice in recent years. Corn will be planted on the better drained soils, and rice on the soils subject to flooding. However, there could be a problem of excess water on the corn land, since corn is highly sensitive to water-logged soils during any period of flooding following heavy rainfall of long duration. If necessary, the area reserved for corn might be protected by a small dike using mechanical equipment which will be available on the farm.

This year (1981-1982), 10 ha. of 144 B9 rice, a short cycle, good yielding variety will be produced. An additional 5 hectares will be seeded to IR8, and AIWA. Five ha. of corn will also be planted. Yields are projected to be 3T/ha. for paddy rice and 2T/ha. for corn.

Next year (1982-83) the planted area will be expanded to 50 hectares.

Designs for a seed-cleaning and testing facility are being prepared by consultants and equipment needs have been identified including preparation and issuance of PIO/Cs. A storage facility for the seed and for production inputs will be constructed. Until this facility is built, the zone storage facilities in Bignona will be used by the farm.

Although the seed processing equipment will most likely not arrive in time for use on this year's crop, this should pose no insurmountable problem since an adequate supply of labor is said to be available in a nearby village, and could be used for harvesting, thrashing and seed cleaning using traditional hand methods.

The site appears to be satisfactory with respect to soils, topography and labor supply but it is in a rather inconvenient location with respect to the rest of the project area. The farm is reached by an unimproved road some 8.5 km in length which intersects the new Diouloulou - Kafontaine road. A bridge crossing a small drainage way traversed by the unimproved road will have to be rebuilt. This location likely will result in higher costs - and possibly delays during periods of heavy rainfall - for moving inputs to the farm and seed produced to other areas of the project than would have been the case if a more central location had been found.

Conclusion: Although considerably behind schedule because of the delay in locating a suitable site of the size desired, the first target of 20 ha of rice and corn should be achieved this year.

Recommendation: In view of the unfilled farmer demands for improved seed, particularly for rice, we recommend that installation of the farm facilities and equipment be given highest priority and that the responsible official(s) be alert for any bottleneck or avoidable delays.

## 2. ESTABLISH HEALTH AND LITERACY PROGRAMS

- a. Improved Rural Health Programs, and
- b. Availability of Basic Medicines

### Present Status

The Project Paper presented a health activity which would develop an outreach program based on the existing system of PPNS's (Programme de la Protection Nutritionnelle et de la Santé). This is a program that organizes mothers into groups which are visited in the villages on a weekly basis and provided medical consultations, health education and nutrition demonstrations. The activity was to be implemented by the Ministry of Health through a special health education unit to be established under the regional health service. SOMIVAC would have participated in an ad hoc health service coordinating committee and PIDAC would have supported the activity by providing local language materials through the literacy unit.

This component has not been implemented. USAID judged the original design to be unacceptable and undertook to redesign the component with the technical assistance of a health specialist funded by the project. This redesign has not been completed, even though the project funded technical assistant has been working in the USAID Health Office in Dakar for nearly two years.

### GOS Health Policy

A fundamental aspect of the GOS health policy is to develop primary health care based on local participation. The three basic objectives of this policy are:

- a) improvement of the health of the rural population.
- b) creation of conditions for rapid development of preventative, curative and educational actions based on popular participation and support.
- c) the right of health for all.

The development of primary health services in this manner would complement and strengthen other forms of local organization developed within the framework of the communauté rurale. They would strengthen and extend to the village level the health services of government operated health posts, while avoiding the problems encountered by numerous village dispensaries that lack a technical support and medicine resupply system.

### Conclusions

The fact that many villages have organized and built dispensaries attests to their strong desire for health improvements. In every area visited by the evaluation team, villagers expressed a strong concern about health and a desire for improved health services. Within the context of the Casamance Regional Development Project, the original concept of developing local health services in conjunction with local language literacy

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still appears to be a valid and promising approach. Literacy and local language health brochures could strengthen the technical and managerial aspects of the health program, while the desire for improved health services could provide a motivation for local language literacy.

### Recommendations

USAID should move forward to redesign the health component. The health component should be designed and implemented to address health and nutritional problems of the Lower Casamance and also to complement the literacy program and other actions that will strengthen local development organizations.

#### c. Improved Literacy Training

##### Present Status

The literacy training program is still in the pre-implementation stage of strategy planning and organizational development. The Literacy Program Coordinator began work with PIDAC late in 1979. During 1980 he worked on determining the target areas for starting the literacy program, defining a literacy strategy to maximize local interest and motivation, and undertaking a socio-economic study of the six villages where literacy centers are planned: Suel, Abenné, Kaguit, Djimande, Diagon, and Oukout.

Six agricultural agents (ATA's) were assigned to the Literacy Unit in January 1981 and have been trained by the Program Coordinator. Of the six agents, four will be Diola instructors and two Manding. Organizational seminars were held on literacy materials for the GP's and on an initial program to train the secretaries of the GP's who are already literate in French. Following the recommendations of these seminars, the Literacy Unit has prepared GP accounting documents in Diola and Manding and is working on additional materials. These early strategy and methodology development steps were aided by a short-term technical consultant (Belloncle, in December 1980) and a short-term training trip by the Literacy program coordinator to Mali in March 1981.

##### Literacy Strategy

The functional literacy component has maintained the general goals and orientation presented in the Project Paper, but changed the implementation strategy. The two-fold rationale for functional literacy is (a) to improve communication between the extension agency and the farmer, who in turn becomes more capable of expressing his specific needs vis-a-vis the Project's objectives, and (2) to enable the farmer to play a control role in the development process by giving him the knowledge and means of assuming direct responsibility for local development activities.

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The implementation strategy for the literacy program presented in the Project Paper was to establish a Literacy Unit under the PIDAC Training Division with a Literacy Program Coordinator and three literacy technicians based in Bignona. The literacy agents were to be VG's who would be given a special two-month literacy training course, after which they would train villagers (GP members) for which they would receive a supplemental indemnity. With this strategy the program was to be active in at least 50 villages and include approximately 2,000 to 2,500 villagers after two years.

The present implementation strategy is to use fulltime literacy agents (specially trained ATA's), in place of the parttime VG's, as the literacy trainers. This strategy evolved after the hiring of the Literacy Program Coordinator and a reassessment of PIDAC implementation capabilities. The six literacy agents now working for PIDAC will train the secretaries of the GP's in September/October 1981, and set up the literacy centers in six villages to begin training 30 men and 30 women at each center in January of 1982. Plans for the extension of this program are not yet specified.

### Conclusion

With the current strategy and level of resources, the project will not achieve the stated end-of-project objective of 36 literacy agents and 3,000 villagers trained. The number of agents is no longer relevant since the project is now using fulltime agents rather than parttime VG's as planned. The current strategy will permit the training of about 720 villagers per year so that in two years less than half of the target number will have been trained, unless some sort of multiplier effect is assumed. The current approach appears appropriate and well thought out. One exception to this could be the plan to use 2 1/2 hour sessions, 4 days per week over several months, rather than six week-long sessions with one week on, then one off as used in Mali and recommended by Belloncle.

Project implementation has been constrained by a severe lack of inputs. The vehicle for literacy activities recently arrived but has been used primarily for other PIDAC activities; the literacy agents are still awaiting mbyettes; the office equipment and field materials have not been purchased. The effective start of the literacy program will require better logistic support and operational independence.

### Recommendations

PIDAC should push forward with implementation of the present strategy. Because of the vital importance of the literacy program to other possible village/GP managed development activities, the literacy program should be assured of operational support as planned in the Project Paper. This means:

- assuring that the Literacy Program Coordinator has access to the vehicle purchased for his use.

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- getting mobylettes for the literacy agents as soon as possible.
- purchasing office supplies (including duplicating equipment) and field materials.
- providing office support (i.e., local language secretary).

As the literacy program gets underway it should be closely monitored by SOMIVAC/PIDAC and by USAID to identify constraints and to determine how additional resources could be used to improve and expand the program as quickly as possible.

#### d. Selected Technical Materials in Local Languages

##### Present Status

The only literacy materials produced so far are the accounting documents for the GP's which will serve as the basis for training the secretaries of the GP's in September/October 1981. However, under the direction of the Literacy Coordinator the 6 literacy agents are working on additional materials that include a Diola glossary, a Manding glossary, a pamphlet on basic arithmetic, and brochures on agricultural problems.

##### Conclusions

Like the entire literacy program, the preparation of materials is getting started very slowly. Nevertheless, the project should be able to achieve the stated objective of 10 technical items prepared in local languages, assuming the planned inputs are provided - particularly typing and duplicating equipment and a local language secretary. The major question is whether 10 technical items will be enough to properly support the program; especially as additional village projects are developed.

##### Recommendations

Project management needs to assure the delivery of planned inputs to permit the proper operation of the material development activities. These activities, like other literacy activities, should be closely monitored and additional resources should be provided as necessary since the supply of well-prepared local language materials is fundamental to the success of the literacy program.

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### 3. Strengthen Agricultural Research

#### a. A Larger and Well Trained Research Staff at ISRA

##### Present Status

The Rice Research Station at Djibelor was created in early 1967 with FED and GOS funding. The objective of the station was to carry out rice research which would result in increased production. With assistance provided by Project 685-0205 funding, the scope of the research is being expanded.

##### Present Staff:

The present professional research staff consists of:

<u>Specialization</u>	<u>Nationality</u>
1 Agronomist/Soil Scientist	Senegalese
1 Agronomist (Plant Breeding)	Senegalese
1 Plant Pathologist	Senegalese
1 Sociologist	Senegalese
1 Economist	Senegalese
1 Agronomist	French
1 Entomologist	French

All seven of the research staff have at least completed 3rd Cycle Training (6 years of University level study with Thesis).

The general work of the research staff and budgets for research can be summarized as follows:

Rice Breeding - The genetic stock includes about 2,000 different entries under observation and selection.

Phytopathology - A budget of 5,000,000 F CFA is provided by USAID and CILSS. The objectives are (a) an inventory of rice diseases in the Basse Casamance, and (b) special studies of the rice disease "pyriculariose".

Entomology - A budget of 7,800,000 F CFA is provided by the GOS and CILSS. The objective is to study and to make an inventory of the insects and to rear in the laboratory the principal insects which attack rice and to formulate techniques and methods for their control.

Weed Control - It is planned to study the physiology of the important weeds on rain-fed crops and on irrigated land.

Rice Production Systems - A budget of 17,000,000 FCFA is provided under the "Convention riz" with USAID. The objective is to develop improved systems of rice production in the Lower Casamance. The action undertaken consists of research on the following; cultural methods for aquatic rice, the use of small mechanized tools and the evaluation of other technology, both on the station and on farms. Also a program for research in soil chemistry and fertilization of ricelands is supported by a budget of 25,000,000 FCFA under "Convention riz".

In addition to research in the areas described above, ISRA is doing long-term research on corn, grain sorghum, and soybeans. Other areas of research largely still in the planning stage, include dairy production, pig raising, bee keeping, and poultry. These wide-ranging actions require that a multi-disciplinary team of research specialists be developed.

As a step toward developing a multi-disciplinary research team the following participant training programs are in progress or planned:

<u>Number</u>	<u>Specialization</u>
1	General Agronomy
1	Agricultural Engineering (farm machinery)
1	Entomology
1	Agricultural Station Management
1	Agronomy (weed control)
1	Soil Science (soil survey and mapping)
1	Micro-Economist

### Conclusions

Considering the present research and plans for training and development of an expanded research staff there is good reason to believe that the goal of 15 professional researchers will be reached.

In the socio-economic area ISRA is undertaking the development of a team for study of farming systems. The areas of socio-economic research include study of the means and methods of production, economic analysis of production systems and the rate of acceptance of the technology package by peasants.

## Conclusion

There is no effective system, either public or private, for assuring the availability of the factors of production - seed, fertilizers, pesticides and materiel - to farmers. If this constraint is not solved in the near future, yields of corn, rice and millet in the project area will be seriously affected. Moreover, farmer confidence in future PIDAC programs may be jeopardized. Since the production factors are essential elements of the improved technology package, their timely delivery and wise use must be given highest priority or else there is no possibility of obtaining the increases in production projected by the project, and in fact, no justification for the project.

## Recommendations:

- a. The problem of provision of production factors - seed, fertilizers, pesticides and materiel - should be aired at the national level and action should be taken to formulate a policy which will assure the establishment of an effective system for timely delivery of production inputs. One possible solution, in the case of fertilizers, is give SOMIVAC the authority and the means to contract with private transporters for the delivery of the fertilizers to distribution points in the project area. SOMIVAC, using its own vehicles, could make final distribution to the GPs.
- b. USAID project management should determine to what extent AID regulation on the use of pesticides and herbicides apply in this instance where the products are purchased using non-AID funds.
- c. That the agricultural credit component of the project be implemented to provide medium term credit for the purchase of draft animals and related materiel, hand-operated cultivators and seeders, and possibly other small machinery. Credit for these inputs should be on a highly selective basis; limited to those exploitations which have the production potential required to pay back the loan.

## Construction of Local Storage Facilities

The project envisages the construction of 30 warehouses to serve the needs of all the GP's, and 10 at the Zone level. The GP warehouses are for storage of production inputs; seed fertilizer, herbicides, pesticides, and small materiel and for storage of seeds produced by members of the GP's. The size of the GP warehouses is 60 M<sup>2</sup> with a weight capacity of 50 tons.

The 10 Zone warehouses will be 150 M<sup>2</sup> in size with a weight capacity of 150 tons. In addition to storage of production inputs and materiel for delivery to the GP's, the Zone warehouses will also have two small offices for the Zone Chief and the supply agent ("Intendant").

It is our understanding that SONAR is responsible for delivery of fertilizer to the Zone warehouses and PIDAC for movement of these inputs to the GP warehouses, From that point farmers will take possession of the production factors under the supervision of GP officials.

Construction is much behind schedule as only five of the GP warehouses and none at the Zone level are under construction (at Oulampane, Katak, Elana, Santhaba Manjack, and Kaguit). The first two were said to be about 80 percent complete.

There are probably multiple causes for the long delay in construction, but it appears largely to have been due to the time taken for SOMIVAC/PIDAC to prepare design specifications and get them approved by AID, and to AID and GOS contracting requirements.

Materials for the GP warehouses was purchased by USAID directly and construction is under the supervision of the Engineering Technical Assistant assigned to PIDAC.

Sites for four of the 10 Zone warehouses have been selected, bids received and a contractor selected. The contract is in Dakar for approval of the National Commission for Contracts.

### Conclusion

Lack of warehouse space both at the GP and Zone levels is a serious hindrance to the timely delivery of fertilizers and other inputs to farmers. Further, there seems to be lack of complete understanding between SOMIVAC/PIDAC and SONAR with respect to responsibility for delivery of inputs. We understand that SONAR believes they are responsible for delivery to the Zone warehouses, while some SOMIVAC/PIDAC officials' views were that SONAR is responsible for delivery to the GP's.

### Recommendation

In view of the critical need for storage facilities in the chain of distribution of production inputs, we recommend that bottlenecks be identified and construction of the facilities be accelerated.

### e. An effective Credit Delivery System

#### Present Status

Credit is provided to individual farmers through the GP's. The chairman of the GP is responsible for both distribution of inputs to and collection of repayment from individual farmers. Thus, extension agents do not deal directly with individual farmers. This system is sound because it provides more responsibility to local level organizations and frees extension staff from an extra work burden.

Interest rate on short term loans for seeds was 25% a year, but as of this year annual interest rate on seeds will be adjusted downward to 12.5%. Interest rate on loans provided for fertilizers and medium term credit items (i.e. draft animals and traction equipment) is 7.7%. In addition, fertilizers have been subsidized at 75%. Rock phosphate has been provided free of charge as a means of encouraging farmers to use it.

Although repayment of loans has generally been good in the past, the situation has deteriorated over the past three years as shown in Table 8.

Table 8

PIDAC: Outstanding Loans, Value of Repayment and Arrears for Short Term and Medium Term Credit from 1978-79 to 1980-81.

Year	Total Value of Loans Outstanding (ST & MT <sup>a/</sup> ) CFA	Repayment (CFA)	Arrears (CFA)	Repayment Rate (%)
1978-79	33,419,814	20,648,754	12,771,060	61.7
1979-80	25,915,000	6,580,798	19,334,202	25.4
1980-81	n.a. <sup>b/</sup>	n.a	n.a	n.a

Source: Figure given by the Head of Cooperatives and Marketing Division of PIDAC.

<sup>a/</sup> ST = Short Term  
MT = Medium Term

<sup>b/</sup> Not available at this time.

Repayment rate dropped from about 62% in 1978-79 to about 25% in 1979-80. Although figures for last year's agricultural season are not available at this point, Mr. NDiaye (head of PIDAC's Cooperative and Marketing Division) feels that the repayment rate is certainly going to be worse than the preceding year. Repayment of short-term loans has generally been high, especially for seed probably because farmers have the choice to repay either in kind or in cash. In 1978-79 for example, 88% of seed loans were repaid as compared with 60% for fertilizer loans.

Medium-term credit is currently in total shambles. Farmers medium-term debt is not known with precision. Disorderly administration and provision of medium-term credit items have resulted in a number of farmers being over-equipped beyond their debt carrying capacity and economic soundness (e.g. Ounck, Djibidjione, Sindian). Also the suspension of medium-term credit program in 1980 has resulted in a number of farmers with incomplete animal traction packages<sup>1/</sup> (e.g., Diouloulou, Sindian, Ounck).

Medium-term credit lacks critical basic supporting services including supply of spare parts, repair shops, and adequate veterinary support. This has resulted in a substantial number of farmers who are not using their traction package because of worn out or missing parts. Another problem which has hampered the effectiveness of medium-term credit has been the ineffectiveness of the animal insurance program in replacing dead animals. In some instances farmers have waited for a year or more to be paid for dead animals and to date there are still many who have not benefitted from the insurance program.

In addition to the above problems, the lack of training of both draft animals and farmers has, in some zones (e.g. Niaguis), resulted in farmers not being able to properly use their traction package effectively. Unless corrective steps are taken there is a danger that farmer's confidence in animal traction may drift away. Timely delivery of other inputs has been also a major concern as was pointed out earlier (see section on "Effective Input Delivery System").

### Institutional Constraints in Credit Provision

One of the main reasons why the credit system is in disarray at the moment can be explained by a number of actions taken by the government in reorganizing major public agencies in an effort to make them more effective and less costly. ONCAD was dismantled in October 1980 and replaced by SONAR (Société Nationale de l'Approvisionnement Rural). ONCAD had been in charge of distributing credit to farmers on a nation wide basis but was primarily concerned with peanut production. Over the years ONCAD has become a "crippled" giant. Mismanagement coupled with poor record keeping contributed to ONCAD ineffectiveness and brought about distrust on the part of farmers. Credit had been loosely distributed without any economic consideration and debt carrying capacity at the farm level. This had resulted in heavy rural indebtedness in some zones as was pointed out before.

SISCOMA, which has been manufacturing animal traction implements, has shut down and as a result new equipment and spare parts are no longer available.

<sup>1/</sup> In these zones some farmers had either traction equipment with no animals or draft animals with no equipment.

The newly established SONAR does not have the means to carry out its responsibilities in terms of moving inputs from Dakar to areas where they are needed. This explains the unusual delay encountered this year.

Because procedures involved in replacing dead draft animals by the Fonds Mutuel de Développement Rural are time consuming, potential beneficiary farmers have not been receiving prompt reimbursement.

Veterinary care has been lacking because procurement of various veterinary medicines has been subjected to cumbersome competitive bidding. This has delayed considerably the timely provision of veterinary care.

Poor training of both draft animals and farmers stems from the fact that extension agents themselves are not adequately trained.

The poor loan repayment rate of the last three years can be explained by the unusually poor rainfall this region has experienced for decades. The severe drought of 1980-81 has had disastrous effects on crops nation wide. This has prompted GOS to stretch out short-term outstanding debt over a five-year period. In an unprecedented action, GOS wrote off all outstanding short-term debt in April 1981. This has further compounded the repayment problem and added confusion as to what portion of short-term debt is written off and what portion remains to be repaid.

In addition GOS has suspended all medium-term credit operations for five years pending a general inventory of outstanding medium-term loans which should clarify individual farmer's debt position.

### Conclusion and Recommendations

In the wake of GOS reassessment of the overall agricultural medium-term credit policy there is not much which can be done in this area. But in the meantime a number of corrective steps should be taken to provide supporting services to those farmers who already have traction equipment including the following:

(1) Training of a number of blacksmiths in selected villages in manufacturing and repair of spare parts for traction equipment. These local artisans could be sent to Sédiou or Kaffrine for short-term training. A credit mechanism should be set up to provide help for initial establishment of workshops.

In addition there is a need for upgrading extension agents' technical training in animal traction if farmers are to be better trained.

(2) A veterinary care program should be set up each year to provide basic health care to all draft animals. SOMIVAC/PIDAC should aggressively follow up with orders for needed veterinary supplies.

(3) SOMIVAC/PIDAC should establish an effective mechanism whereby farmers would get prompt reimbursement for dead animals. This may require designating one person to be exclusively responsible for following up reimbursement applications in Dakar with Fonds Mutuel de Développement Rural: FMDR.

Other areas in which USAID credit fund could be used include the following:

1) Short-term credit for herbicides. Given that the drought has become a recurrent phenomenon, the extension service of PIDAC has been recommending direct planting of rice. The shift from transplanting to direct planting has been a major change in farmers habits and farming practices. As a result of this change weed control has become a major concern because traditionally farmers were not equipped for weeding. Following successful in-the-field demonstrations of herbicides application on rice and corn last year, many farmers have expressed interest in using herbicides. Although under the current level of input subsidy (75 percent on compound fertilizers and urea, 100 percent on rock phosphate, and no charge for insecticide treatment) the cost of 15,000 CFA/ha for herbicide may be profitable, any downward adjustment of this subsidy may not be financially attractive (see last page for financial analysis). Thus, the introduction of herbicide should be carefully studied on a case by case basis to make sure that its application is financially sound.

2) Medium-term credit for small equipment at the village level. The following are some suggestions on how USAID special credit fund should be used to obtain more productive resources at the village level.

- a. Corn shellers, corn and rice mills. As was pointed out earlier, corn is increasingly becoming a major diversifying crop. But unless corn shellers and mills are made available at the village level, production is likely to slow down considerably. The special credit fund could be expanded to include rice mills as well.
- b. Small equipment for Vegetable production. As vegetable production becomes a major off-season activity for farmers in the Lower Casamance, water supply becomes a critical factor. Credit should be made available for acquisition of pumps to those villages where farmers have convincingly demonstrated some degree of commitment to this activity by digging wells and a repayment capacity has been established.

The choice of the size of the various equipment mentioned above will obviously have to take into account the number of potential users. In any event, priority should be given to labor intensive equipment especially for corn shellers.

A credit specialist should be hired to conduct an indepth study including a preliminary inventory of potential beneficiary village organizations, general attitude towards credit, past credit rating, etc... Detailed explanation regarding provision for depreciation, operating costs and charge to individual users should be given at the outset to avoid misunderstanding.

To be more effective, this credit program should follow closely the literacy program. This will ensure that farmers will take more responsibility in managing their own operations.

**f. Small Dams for Water and Salinity Control.****Present Status**

The initial target was the construction of 20 small dams and repair of 5 existing dams for retention and control of fresh water during the dry season, and to act as a barrier against intrusion of salt water during the dry season. The 20 dams would control the water on an estimated 400-500 hectares of land in the small marigots, or about 20 hectares per dam.

On his arrival in December 1979, the Project Engineer found that the locations for the dams had not been selected and consequently no topographic surveys were available. Compounding this problem was the absence of any engineering equipment in SOMIVAC/PIDAC with which to make the necessary topographic surveys and prepare construction design.

Some 18 months after his arrival the needed equipment has begun to arrive. In the meantime, using borrowed equipment, the engineering section has completed topographic surveys for the first two dams. The engineer anticipates that four of the small dams will be completed in this calendar year.

Initially the small dams were conceived as simple water retention and control structures which would allow the exit of excess fresh water through the dam during the rainy season and prevent the inflow of brackish water. However, the findings of ILACO in their studies in the early 1970s on the reclamation of highly salty soils of the Lower Casamance show that these simple control structures may lead to disastrous results on certain soils. These soils, high in sulfides, undergo oxidation on drying which release sulfuric and other acids. The acids formed may drive the pH (a measure of soil acidity) to levels as low as 2-3. Such high levels of acidity put into solution certain elements, including iron, aluminum, manganese and magnesium, which if present above a certain level are toxic to rice.

ILACO found that the acidification process could be prevented by allowing an influx of brackish water during the dry season to keep the soil profile saturated with water. With the onset of the rainy season, the salty water and accumulated salts are reduced to tolerable levels by the flushing action of fresh water.

Whether a particular dam should be designed for a two-way flow of water, or simply a one-way flow, depends upon the nature of the soil on which the water is being controlled. This information is best obtained by a pedologic study and evaluation of the soils to be flooded, including laboratory analysis. The scale and level of detail of soil maps of the project area do not provide the information required. The engineer is very conscious of this problem and is endeavoring to find certain external indicators such as the kind of vegetation or appearance of the soil surface which would indicate if a particular soil would likely undergo acidification on drying.

**Conclusion:**

An adequate soil study should be made of each dam site and the area controlled by the dam, to (a) aid the engineer in design of the dam and (b) provide guidance on

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All the above activities should strengthen agricultural research in the Lower Casamance. Research will be coordinated and systematized by the "Cellule de Recherche et Developpement" which coordinates the problems of development encountered by SOMIVAC with research undertaken by ISRA.

## b. Improved Technological Packages

### The present Package

ISRA is responsible for the development of the production technology used by the Agricultural Extension Division of PIDAC. This "package" is described in a series of leaflets ("fiches techniques") which are given to the farmer contact agents and their supervisors, the zone chiefs. In addition, training sessions are held to teach agents how to carry the various items and practices described in the "fiches techniques".

This technology package now includes the following:

- improved varieties of rice, corn and peanuts
- time and method of planting
- kinds, amounts and method of fertilizer application
- weed control methods, including use of herbicides
- control of insects and diseases
- use of animal traction.

At least a dozen improved varieties of rice, including rain fed, water table (riz de nappe) and aquatic rice, have been tested and found suited for farmer use in the Basse Casamance. Some of these varieties, such as IR-8, produce outstanding yields under optimum growing conditions, including timely planting, adequate water and weed control, and high soil fertility, but have limited resistance to soil moisture stress, diseases, low fertility or other unfavorable environmental conditions. Certain varieties, such as Ablaye Mano, Gambiaka and D52-39, have a degree of salt tolerance but their growth cycle is too long, particularly during years when the rains begin late and water supplies are limited. About 300 local varieties and lines have been identified and selection made from among them. A total of about 2,000 lines and varieties of rice are under observation and testing by ISRA.

A rice variety, 144B9, originating in the Ivory Coast has great yield stability under less than favorable conditions, and under good conditions is a heavy producer. Farmer requests for this variety jumped from a few tons for the 1979-80 crop year to 112 tons for the current campaign (1980-81). Unfortunately, only about 34 tons are available for planting this year. To make up the difference SOMIVAC is trying to arrange for the purchase of seed of a similar improved variety available in the Gambia.

If current plans for the seed farm are carried out on schedule, 10 hectares of 14489 will be planted this year and should produce 30 tons of seed for planting next year (1981-82).

The corn production component of the technology package is a success story. Within a three year period, the area planted in corn has increased from 38 hectares to 986 hectares, more than two times the projected figure for the 1980-81 campaign. With the increasing interest in expanding corn production, certain precautionary remarks seem in order. Although corn has produced very well during the past three years when soil moisture conditions were generally not excessive, in years of heavy and prolonged rainfall corn, if planted on inadequately drained soils, could fail to produce a satisfactory crop. Corn is sensitive to a lack of sufficient oxygen in the root zone caused by water logging and it should not be planted on land where water still stand for more than 24 hours following a heavy rainfall. Another item to be alert for is insect and disease problems. As the area of corn increases there may be a concurrent build-up of insects and diseases.

The following blanket fertilizer package was developed by ISRA utilizing the results of fertilizer trials on different crops.

<u>Crop</u>	<u>Mixed Fertilizer</u>	<u>Rate (kg/ha)</u>
Rice	8-18-27 or 6-20-10	200
	Urea	150
Millet/sorghum	8-18-27 or 6-20-10	150
	Urea	100
Corn	8-18-27 or 6-20-10	300
	Urea	200
Peanuts	8-18-27 or 6-20-10	150

In addition to the above, 400 kg/ha of Taiba rock phosphate is recommended to combat soil acidity and to supply calcium, particularly on salt-affected rice lands. However, delivery for this year has been cancelled.

These recommendations do not vary depending on the kind of soil, previous cropping history and whether the rains have started late which usually results in a shortened growing season and lower yield potential. Under the latter conditions reduction in the amount of fertilizers applied might be advisable. Another more common instance where economies in fertilizer usage might be made is on rain-fed rice being planted on land newly cleared following a number of years in bush or forest fallow.

#### Research to Improve Technological Package

Although the present technological packages will give good yield increases if properly applied - assuming adequate and timely rainfall -

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there is a need to strengthen the existing technology and to introduce new practices and cropping systems. This will require intensification of existing applied research and initiation of new research.

In the former category for example is on-farm testing to determine the most economic levels of fertilizer use, and the minimum amount of herbicides and pesticides needed. In the latter category, one thinks of research on farming systems which integrate cereal crops, livestock and forage production. Such research might provide the basis for elaboration of a crop and livestock enterprise which would give yield increases through natural soil fertility and organic matter improvement, and very importantly it might show that the quantities of certain fertilizers, particularly nitrogen and potassium could be significantly reduced. Research on forage species already available in Senegal is believed to be adequate for initiation of crop - livestock - forage systems research.

Agro-economic research is urgently needed to study and determine the expectable economic returns to the farmer from the application of the various items in the technology package. For example, alternative studies may show that weed control can be achieved at less than the 15,000 FCFA, the present cost of using herbicides.

#### Steps Being Taken to Improve the Package

ISRA is fully aware of the need to strengthen its research capabilities particularly in the areas of weed control, micro-economics and farming systems, and has taken steps to do so as described elsewhere in this report. The need to bridge the traditional "void" between research and extension is recognized.

The SECID Contract component of the Project will provide three research specialists; an agronomist (weed control), a production agronomist and a macro - economist. These specialists should be able to assist in the establishment of applied research to strengthen and develop new technology for the extension services, as well as economic research on farming practice

#### Conclusions:

Past research in the Casamance and elsewhere has provided several rice varieties well adapted to conditions in the Lower Casamance. Soil deficiencies and hazards such as the irreversible acidification of certain soils on drying, and the low level of nitrogen and phosphorus particularly in upland soils have been identified and described. A general fertilizer recommendation which seems to be widely applicable has been established, but additional field tests are needed to refine the rates according to kind of soil, and cropping history.

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ISRA's plans for strengthening current ongoing research and for initiation of new lines of research particularly in weed control, farming systems, livestock production and micro-economics seem to be realistic and well thought out and the results should support agricultural extension production programs.

#### Recommendations:

We recommend (a) that the project continue to support the ISRA component to assure a flow of field-tested research results, and (b) that plans be formalized for periodic meetings of ISRA and PIDAC professional staff to review the technology package and discuss problems on which research is needed.

### c. Effective Liaison Between Research and Extension

#### Present Status

The transfer of agricultural research information into specific technological packages which the extension services can use is an area of weakness in the Senegalese agricultural organization. Much research information and data which would be useful if adapted and translated into practical extension programs has remained unused because of a lack of effective liaison between the research organization and extension services.

Liaison is necessary not only to facilitate the transfer of research findings and information, but it also enables the researchers to benefit from the observations of field extension personnel on: (a) particular problems they have observed in the field such as presence of unidentified insect pests or diseases, abnormalities in plant growth or difficulties in harvesting or marketing crops; (b) provide feedback to the research staff on the effectiveness of the current technology packages; and (c) any special problems encountered in applying the packages.

The Directors of SOMIVAC and PIDAC have decided to reactivate the Committee for Research and Development which was established in 1977. The President is the Director of ISRA and the Secretary, the Director of SOMIVAC. The Coordinator of the Committee is the principal agronomist in SOMIVAC/DEEP. Membership includes the research specialists of ISRA and the principal technicians and specialists of SOMIVAC/PIDAC. There have been a few activities undertaken by the Committee including a seminar on seed supply.

The SECID contract will provide ISRA with three research technicians; a weed control specialist, a micro-economist and a production agronomist. These specialists will probably have had long experience in mission-oriented research on agricultural production problems and they should be able to assist in organizing an effective vehicle for formulating technology packages for extension purposes utilizing pertinent research findings.

Conclusion

Establishing the Committee can provide a vehicle for interchange of ideas and information between the research specialists and those responsible for development programs. This is a good first step.

Recommendations

The Committee for Research and Development should become an active force in the choice and planning of agricultural research projects, and in the preparation and updating of improved technological packages for use by the extension services.

SOMIVAC/SIEGE : Situation - Cadres sur Place au 31 Mars 1981

Table 9

Direction Commerciale Services Administratifs et Financiers, Bureau Liaison		UPR / DEEP		D T O		D A R	
30 juin 1978	31 Mars 1981	30 juin 1978	31 mars 1981	30 juin 1978	31 mars 1981	30 juin 1978	31 mars 1981
Directeur Général	(a) Directeur Général (a) Secrétaire Général Chef Serv. Adm Chef Personnel Agent Liaison	Economiste/Chef Economiste  Agro/Economiste Sociologue Statisticienne  Ing. Génie Rur.	(a) Agro-Econ/Directeur Economiste (a) Agronome (a) Agronome (a) Agronome (a) Sociologue Statisticienne (a) Ecotechnicien	Agronome  Insp. Exp. Rural	(a) Agronome/Directeur (a) Agronome (a) agro-formateur Insp. Exp. Rural Insp. Anim. Rural Insp. Coop. Ing. Travaux Ag.	Ing. Travaux Ruraux	(a) Ing. G.R./Directeur (a) Ing. Génie Civil (a) Ing. Travaux Ruraux Tech. Sup. G.R. Agronome
Agent Compt. part. (ACP)	Agent Compt. part. (ACP) Adjoint ACP Comptable Comptable (a) Chef Compt. titulaire						
Chief Serv. Fin.	Direct. Adm. Fin. (a) Adj. Chef. Fin. (a) Adj. CIG						
Agent Adm. Fin.	Agent Adm. Fin.						
4	14	6	8	2	7	1	5
Underlined = Expatriate							
(a) = BS or MS level							

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#### 4. Develop an Effective Regional Planning and Coordination Capability

##### a. A Well-Trained Professional Staff at SOMIVAC

###### Present Status

Table 9 shows a total number of 18 professional staff currently working in the headquarters of SOMIVAC. Although this number represents a substantial increase over the last three years, the number of Senegalese professionals in the two key divisions of studies, Evaluation and Planning (DEEP) and Technical Operations (DTO) is still very low. For example, of the three highly trained professionals at DTO, only the Director is Senegalese. Also there is only one Senegalese Agricultural Economist trained at BS level in DEEP.

There are currently seven Senegalese in the U.S. for long-term training and two for short-term training, as compared with 33 person-months and 25 person-months planned for long term and short term training respectively.

The lack of well-trained personnel has hampered SOMIVAC's effectiveness in building a sound capacity in critical areas such as project identification and evaluation and has prevented SOMIVAC from undertaking needed studies in certain priority areas.

###### Conclusions

The main reason why SOMIVAC has not been able to attract needed professional staff is lack of financial resources to hire highly qualified professionals on contract basis. GOS has not been willing to provide SOMIVAC with enough money for this purpose.

###### Recommendations

- In order to enable SOMIVAC to assure its responsibilities, there is a need for developing and strengthening its planning and evaluation capacity as recommended by Purdue.

- USAID should continue to support long term training of Senegalese especially at MS level.

- SOMIVAC should devise mechanisms to develop terms of reference for studies and project development using funds provided for this purpose by USAID.

- Following SOMIVAC's transformation to a National Society (Société Nationale), the GOS should provide more financial support to SOMIVAC to hire needed personnel.

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b. Resource Inventory

Present Status

SOMIVAC has a good resource inventory that was prepared with financial and technical assistance by the World Bank and the Caisse Centrale and published in September 1978 as Le Plan Directeur du Développement Rural pour la Casamance, Avant-Projet. This study of nine volumes includes extensive information on climate, hydrology, infrastructure, demography, social structure, and economy of the region as well as an outline of a development strategy by sub-region and possible medium-term development programs.

Under the Casamance Regional Development Project, the parts of the existing Plan Directeur relating to the Lower Casamance will be updated and expanded under a contract with Harza Engineering Company International (HARZINT). This contract contains three Phases with completion and acceptance of the report for each phase by SOMIVAC and USAID being a condition to the start of the next phase. Phase I consists of the resource inventory appraisal and presentation of two development options with formulation of preliminary layouts for prefeasibility analysis. HARZINT presented an Inception Report on Phase I in March 1981. The Phase I Interim Report was due on June 15, 1981, but had not been submitted as of June 29. The final report on Phase I is due October 15, 1981.

Conclusion

HARZINT has experienced some difficulty in mobilizing needed personnel and received some critical review from SOMIVAC and USAID on the Inception Report. It is too early to judge the contribution Phase I will make to resource comprehension and development strategy formulation in the Lower Casamance.

c. Plan for Resource Utilization

Present Status

The Plan Directeur prepared by SOMIVAC in September 1978 presented the outline of a rural development strategy for the Casamance. This plan contained several possible alternative development strategies, suggestions for a medium-term investment program and a more detailed development plan by subregion.

Building on the recommendations of the Plan Directeur, SOMIVAC/DEEP (Direction des Etudes, de l'Evaluation et de la Programmation, formerly the UPR - Unité de la Planification Régionale) has supervised several more

specific planning studies conducted by short-term technical assistants. These planning studies have addressed vegetable and fruit production in general as well as the development of several specific fruits and vegetables.

Under the contract with HARZINT, Phase II will study several priority subprojects selected by SOMIVAC from the Phase I inventory. These subprojects will be analyzed in sufficient detail to prepare a feasibility analysis of each. Assuming successful completion and acceptance by SOMIVAC and USAID of Phase I, Phase II will start in January 1982.

### Conclusions

Most planning studies undertaken to date by SOMIVAC have been within or following upon the context of the Plan Directeur. Several other studies including poultry and beef production, irrigation development, vegetable and fruit commercialization and processing, and soybean production have been identified and are being carried out, although slowly and with some difficulties depending on available financing and professional expertise within DEEP.

### Recommendations

A formal mechanism is needed whereby DEEP can draw up terms of reference and get funding for project identification studies under the Casamance Regional Development Project. Funds exist for this purpose but remain largely unused because of the lack of jointly approved topics and of a mechanism by which DEEP can use available funding.

Staff development at DEEP should consider not only the technical expertise needed for planning studies, but also management expertise for organizing and supervising a planning and study program.

The planning program should be diversified from the present concentration of large state-directed interventions to include considerations of local level GP and private investment projects.

## d. Feasibility Studies and Design of Development Projects

### Present Status

DEEP has one study coming out of the inventory and planning process which is now being developed as a project. The West African Development Bank (BOAD) has agreed to finance the feasibility study for a cola nut, palm oil and coconut project in the Lower Casamance and will finance implementation of the project if the feasibility is favorable. The feasibility study has been underway for over a year, but has so far made little progress.

Feasibility studies for irrigation development in several valleys (i.e. Baila, Kamobeul, Soungrougrou) are also going forward, but supervision of these is by the Ministry of Equipment. SOMIVAC generally only follows these by reading progress reports and occasional visits.

Under the HARZINT contract, Phase III will contain the final plans for the feasible projects identified. According to the planned timeframe this final design will not be completed until 1983.

### Conclusions

SOMIVAC has been successful in getting one project to the final design stage. Other projects are being developed in coordination with SOMIVAC but not under SOMIVAC's direct supervision.

### Recommendations

Recommendations are the same as for 4 c. SOMIVAC/DEEP needs further staff development, particularly design management expertise, a mechanism for using funding available for project identification and design, and a more diversified project approach that also incorporates local projects.

## e. Evaluation of Development Activities and Inputs

### Present Status

In 1979 SOMIVAC created a technical commission which has among its objectives the standardization of data collection on projects in the Casamance. The intent was to establish better monitoring of project implementation and to permit evaluation against stated project outputs and objectives. Unfortunately, the work of this commission has not yet produced the desired results. As a result, SOMIVAC is still considering how project monitoring and evaluation might best be done. Because of this problem, only evaluations of PRS and PIDAC were planned for the 1980/81 fiscal year.

Within the framework of the PRS, several IBRD technical missions have reviewed the existing methodology for monitoring and evaluating projects both at the project level and in DEEP. These reports provide some good insights on evaluation problems that could be applied to PIDAC as well. At the national level a IBRD financed program to improve project preparation, implementation and evaluation techniques has also reported (Feb. 1981) on methodologies for economic and financial analysis within PRS. Similarly, the Joint SOMIVAC/USAID evaluation (June 1981) of the Casamance Regional Development Project will help SOMIVAC understand USAID monitoring and evaluation practices.

In March of 1981, the Casamance Regional Development Project provided a consultant (Morris of Purdue) to look at evaluation systems and experience in the Casamance in order to recommend how SOMIVAC might best establish a

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project evaluation capability within la Direction des Etudes, de l'Evaluation et de la Programmation (DEEP). Morris found that the present system of yield estimation suffers from too many data errors, often provides the wrong kind of information and takes too long to produce results. He recommended that a new evaluation system be organized using a redesigned questionnaire to permit computer processing within DEEP and that the project provide equipment and technical assistance to initiate this new system.

For monitoring the possible health and environmental inputs of irrigation development a health surveillance study of Guidel Valley has been established. This study started in April 1981 and will continue for three years during which time the Guidel dam will be completed and irrigation in the valley greatly expanded. The study is being directed by Dr. Samba Diallo (Chef du Département de Parasitologie de l'Université de Dakar) with two medical surveillance teams of three technicians and one laborer each that will work under the supervision of the Chef Médical Officer of Grandes Endémies at Bignona. The study will follow the incidence of malaria, schistosomiasis, and intestinal parasites, the quality of water, and the existence of pesticide and fertilizer residues.

### Conclusions

SOMIVAC has not yet instituted a standardized system for project monitoring and evaluation. Evaluations and studies of projects have been done on an ad hoc basis, generally using the methodology of the technical assistant or donor agency involved. A plan for establishing an evaluation capacity within DEEP exists from the report of Morris but has not yet been implemented.

### Recommendations

SOMIVAC should proceed with the development of a standardized system for project monitoring and evaluation. This system should include a SOMIVAC capacity for data collection and field study that would relieve the extension agents of some of their data collection responsibilities as discussed in Output 1 on agricultural extension. The development and operation of the system, however, should be closely coordinated with ISRA under a protocol agreement, so as not to unnecessarily duplicate data processing capacity and socio-economic research that will be undertaken as part of ISRA's productions systems research program.

## f. Improved Coordination with Other Development Agencies

### Present Status

The public law establishing SOMIVAC (Loi N° 76-64 of June 29, 1976) defined multiple roles for the new regional organization. SOMIVAC responsibilities were to include:

- (1) Planning for rural development including the definition of development strategies, identification and elaboration of development programs, and studies of new and ongoing activities.
- (2) Coordination of the agricultural development activities of various development agencies working in the Casamance.
- (3) Supervision of development activities: to follow implementation, verify and evaluate results and take corrective measures as necessary.

In the area of planning, SOMIVAC's functions and responsibilities are clear and have been implemented as presented in 4 b-d above. SOMIVAC's planning activities have followed the general directives of the National Development Plans and specific requests of the Ministry of Rural Development and international donors. SOMIVAC has generally not been aggressive in defining and seeking support for its own development strategies and programs.

In the area of coordination, the responsibilities of SOMIVAC are not as clearly defined nor as readily accepted by other governmental agencies. The primary means of regional coordination is not through SOMIVAC but through the Governor and the Comité Régional de Développement (CRD) which incorporates all the technical as well as administrative structures in the region. SOMIVAC has organized various technical coordination groups, like the Regional Coordination Committee for the Casamance Regional Development Project, but these groups have been ineffective beyond coordination of resources and activities strictly associated with a donor financed project. The effects of this lack of regional coordination are apparent throughout the Lower Casamance where one sees the project supported activities of PIDAC displacing activities of the traditional services, but not replacing those services which continue to exist, generally without adequate operating support. For example, traditional services in the Lower Casamance support local cooperatives, women's vegetable production (Agriculture and Promotion Humaine), family poultry production (Elevage and Promotion Humaine), fruit culture (Agriculture and Promotion Humaine), and fishing development (Promotion Humaine) all activities with which SOMIVAC is dealing separately under its planning activities and its implementation of integrated development projects like PIDAC, PRS and MAC.

These problems of coordination are ones that have been brought up and discussed on numerous occasions since the creation of SOMIVAC. A government policy for coordination has evolved but implementation of that policy is not yet visible. The GOS Plan de Redressement Economique presented as a basis for reform "a reorganization of the national agencies and regional societies for rural development with a view to decentralizing their management, reducing their costs of operation and increasing their efficiency". With this general orientation the Plan de Redressement stated that,

"the regional rural development societies will become the principal agents providing assistance to the cooperatives and promoting rural development. The purpose of these

societies will be to set up flexible management systems in which the project units and sub-regional organizations close to the village communities will have the necessary autonomy and human and financial resources to provide their personnel with the necessary mobility and enable them to play their assigned role of assisting the cooperatives and providing extension services to the farmers".

In the area of supervision, the various interpretations of SOMIVAC's authority and the overlapping and sometimes contradicting authority of other agencies has created some confusion. In fact, three general types of relationships can be found: (1) projects integrated with and subordinate to SOMIVAC like PIDAC, PRS, MAC; (2) projects which SOMIVAC monitors but does not direct like applied research by ISRA, Kamobeul Project, Baila Project and the Soungrougrou Project and (3) projects which are independent of SOMIVAC like SODAGRI, SODEFITEX, Kalounayes Project, UNDP/FAO Forestry Project, and projects of the CER's and traditional services. The distinction between these categories is generally not clear and is sometimes a point of dispute between SOMIVAC and the other governmental agencies.

### Conclusion

While the general government policy for the coordination of regional rural development appears clear, the implementation of this policy is not. Attempts to resolve this situation have primarily concentrated on improving communication through various coordinating groups, rather better defining roles and responsibilities and establishing protocol agreements for areas of joint responsibility. An exception to this general rule is in the area of applied agricultural research where SOMIVAC has established a good working relationship with ISRA and has specific agreements with ISRA for certain accompanying research. This cooperation for research/extension liaison will be further defined under the Casamance Regional Development and Agricultural Research and Planning Projects of USAID by a protocol agreement to be established between SOMIVAC and ISRA.

### Recommendations

At the national level SOMIVAC should push for a clarification of its coordination responsibilities within the context of program contracts (ordres de mission) or management contracts (contrats-plan) being developed for regional rural development societies.

At the regional level, SOMIVAC should consider more extensive use of protocol agreements with other government agencies to clarify responsibilities and use of resources to avoid duplication and waste of resources.

**FINANCIAL SUMMARY**  
**U.S.A.I.D. Contributions**  
**Millions \$ US**  
**March 31, 1981**

Project Component	Planned	Obligated		Committed*		Disbursed including accruals	
		Amount	%	Amount	%	Amount	%
Technical Assistance	3.52	2.461	69	1.458	41	0.719	20
Training	1.28	0.279	22	0.379	30	0.238	19
Material & Equipment	1.79	0.215	12	0.445	25	0.224	13
Construction	2.90	1.525	53	0.100	03	0.040	01
Studies	6.00	3.000	50	3.042	51	0.122	02
Agricultural Credit	1.25	0	0	0	0	0	0
Operational Support							
PIDAC	3.64	1.165	26	1.309	34	0.924	24
ISRA	0.26	0.125					
Health Service	0.50	0.160	32	0.146	29	0.005	01
Special Projects	0.40	0.050	12	0.110	27	0.073	18
Inflation & Contingencies	2.21	0.220	10	-	-	-	-
<b>TOTALS</b>	<b>23.75</b>	<b>9.20</b>	<b>39</b>	<b>6.989</b>	<b>29</b>	<b>2.345</b>	<b>10</b>

\*Increases over amount obligated represent distribution of funds from inflation and contingency.

**FINANCIAL SUMMARY**  
**Government of Senegal Contribution**  
**Millions \$ US**  
**March 31, 1981.**

Project Component	Planned	Disbursed	
		Amount	%
Agricultural Credit	0.915	0.174	19
Operational Support	7.477	3.196	43
Subsidies of Production Inputs	2.100	0.193	9
Interest paid by Farmers	0.255	0.236	93
Rental of Buildings	0.043	0	0
Equipment of Dispensaries	0.015	0	0
<b>TOTAL</b>	<b>10.80</b>	<b>3.80</b>	<b>35</b>

**LIST OF PEOPLE CONTACTED  
DURING THE EVALUATION**

NAME	TITLE	LOCATION
<b><u>SOMIVAC (Siège)</u></b>		
TALL, Moktar	Directeur Général	Ziguinchor
JOYCE, Charles	Conseiller Technique	"
SHILLINGER, Riener	Directeur de la DEEP	"
CAMARA, Moustapha Mamadou	Directeur DTO	"
SARR, Omar	Economiste DEEP	"
DA COSTA, Paul M.	Agro-économiste	"
SANCHEZ, Nicolas	Zootechnicien	"
KAUFMAN, Hans	Bureau Formation	"
TENDENG, Pierre	Directeur DAR	"
BADJI, Simon	Secrétaire Général	"
<b><u>PIDAC (Siège)</u></b>		
SAKHO, Cherif Younous	Directeur	Ziguinchor
WANE, Alfousseyni	Chef Division Vulgarisation	"
N'DIAYE, Moustapha	Chef Division Cooperation	"
TAMBA, Abdou	Chef Section Alphabétisation	"
COLY, Mamadou	Chef Section Formation	"
HO, Dan H.	Agronome Div. Vulgarisation	"
TRUONG, Huan Dinh	Ingénieur Génie Rural	"
<b><u>PIDAC (Départements)</u></b>		
<b><u>Département de Bignona</u></b>		
ZALLE, Pierre	Chef Département	Bignona
DIEDHIOU, Mamadou Diamakary	Chef Coordinateur Est Ingénieur des Travaux d'Elevage/ITE	"
TENDENG, Ousmane	Agent Technique d'Elevage/ATE	"
SAGNA, Ibrahima	Chef de Zone Sindian	Sindian

LIST OF PEOPLE CONTACT  
(cont.)

NAME	TITLE	LOCATION
<u>PiDAC (Départements-Bignona)</u>		
FALL, Bassirou	Chef Secteur Bouhém	Sindian
COLY, Timothée	Chef de Secteur Médiègue	Médiègue
12 FARMERS	Secteur de Médiègue	"
DIATTA, Didièr	Chef de Zone Diouloulou	Diouloulou
MANE, Mamadi	Chef de Secteur Séléti	"
COLY, Idrissa	Chef de Secteur Tamborille	"
SYLLA, Moussa	Chef de Secteur Kadio	"
SANE, Mamadou	Chef de Secteur Diana	Diana
12 FARMERS		Diana
COLY, François Xavier	Chef de Zone Tendouck	Tendouck
COLY, Fulgence	Intendant de Zone Tendouck	"
BADJI, Chérif	Chef de Secteur Mangagoulack	"
COLY, Ibrahima	Chef de Secteur Balingor	"
SAMBOU, Lucien	Chef de Secteur Boutem	"
5 FARMERS(2 men, 3 women)		"
DIEDHIOU, Daouda	Chef de Zone de Ounck	Ounck
SAGNA, Bouhina	Intendant de Zone Ounck	"
GOUDIABY, Abas	Chef de Secteur de Ounck	"
15 FARMERS		"
<u>Département de Ziguinchor</u>		
GOUDIABY, Mamadou	Chef de Département de Ziguinchor/Oussouye	Ziguinchor
BASSENE, Kéiountary	Chef de Zone Niaguiss	Agnack
DIALLO, Boubacar	Chef de Secteur de Niaguiss	Niaguiss
COLY, Lazare	Chef de Zone de Nyassia	Nyassia
TENDENG, Jean Didier	Chef de Secteur Kaguite	Kaguite
11 FARMERS		Kaguite
GOUDIABY, Mamadou	Chef de Zone Kabrousse	Kabrousse
N'DIAYE, Thierno	Intendant de Zone Kabrousse	Kabrousse
32 FARMERS (20 men & 12 women)		Boucott Oloff
<u>ISRA</u>		
TOURE, Noctar	Directeur	Djibélor/Ziguinchor
PANTHER, Dennis	Superintendant	

CF