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EVALUATION REPORT

LOWER CASAMANCE INTEGRATED RURAL DEVELOPMENT PROJECT (685-0205)

VOLUME 1: MAIN REPORT

DAKAR, SENEGAL

July, 1983

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Dear Bob:

Enclosed is the final copy of the evaluation report. I have sent copies via both pouch and international mail. I apologize for the delay. In hindsight I would have served everyone better had I just remained in Senegal an additional two weeks and completed it there.

I have sent copies of the report to Charlie Steedman and Peter Block and a copy of the summary and the monitoring and evaluation section to Bill Morris and Sandra Bertoli. I will send my expenses shortly.

Sincerely,

Tom Zalla

Tom Zalla

Enclosures

DOC

USAID AFRICA BUREAU

Evaluation Executive Summary

Prepared by:	Tom Zalla Evaluation Team Leader
Date:	July 29, 1983
Project:	Lower Casamance Integrated Rural Development Project (685-0205)
Country:	Senegal
Cost:	USAID: $23.7 Million Government of Senegal: $10.8 Million
Period of Project:	August, 1978 - August, 1985 (including a two-year extension)

I. What constraints does this project attempt to relieve?

This project seeks to overcome labor, technology, resource, marketing, institutional and weather constraints on agricultural production - especially rice production - in Bignona, Ziquinchor and Oussouye Departments of the Casamance Region of Senegal. It seeks to raise the level of living of the rural population in the project area by increasing incomes and by providing health services and literacy training to local farmers.

II. What technology does the project promote to relieve these constraints?

To overcome agricultural production constraints the project provides animal traction equipment, improved seed, fertilizer, credit and extension services to farmers. The extension program emphasizes cultural practices such as application of manure and chemical fertilizers, flat plowing for cereals, early planting, thinning, more frequent weeding and use of improved seeds. The extension service has also been promoting maize production as a higher yielding alternative to traditional cereals, and rain fed rice as an alternative to aquatic rice under conditions of limited rainfall. In addition, the project provides solar driers for vegetables and it constructs small dikes to rehabilitate lands subject to salt water intrusion.

To improve the flow and adoption of new and more useful agricultural production technologies and policies the project provides a farming systems agronomist and a marketing economist for the Djibelor Station of the Senegalese Institute for Agricultural Research (ISRA). A village literacy program teaches farmers to read and write one of two vernacular languages using materials based on important agricultural extension and health program themes. The health program is still being designed.

III. What technology does the project attempt to replace?

Farmers using traditional methods prepare their fields manually, generally planting in ridges. Farmers often plant late, weed infrequently and do not use chemical fertilizer. Many farmers still use rice varieties that perform well only with normal amounts of rainfall. They rely on an elaborate system of small dikes and ridges to control water and salt levels on aquatic rice lands.

IV. Why did project planners believe that intended beneficiaries would adopt the proposed technology?

Some of the components of the new technologies offered to farmers were already in use by a minority of farmers in the project area. Others, such as flat plowing, showed promise based on available research results. Budgets prepared on the

basis of available information indicated that family income would increase by 40 - 95%, depending on the zone, if the technologies proposed by the project would be adopted on all of a farmer's land. These changes were thought to be feasible within the constraints of available labor and soil resources.

There does not appear to have been any discussion with farmers concerning the specific cultural techniques to be extended to them. However, the supply of improved inputs was a chronic and obvious problem and improving it appeared certain to increase their use.

What characteristics did the intended beneficiaries exhibit that had relevance to their adopting the proposed technologies?

Farmers in the area were already aware of the potential of fertilizer and improved varieties from previous projects. The animal traction package was well received in the Central Casamance and had spread spontaneously to the eastern part of the project area.

The low level of education of farmers in the project area, coupled with corruption and deception in regular public sector input supply and marketing programs suggested the need for a strong adult literacy component to support the extension, input supply and credit components.

What adoption rate has the project achieved in transferring the proposed technologies? Why have or have not intended beneficiares adopted this technology?

Data available at the time of the evaluation show that households having direct contact with an extension agent during the 1982 crop year had a substantially higher adoption rate for improved seed for all crops and a higher adoption rate for flat plowing for rain fed rice. On the other hand, differences between farmers working with the extension service and those who did not were minimal for flat plowing other crops and for weeding and thinning. Data on the use of fertilizer are sketchy but suggest that farmers working with PIDAC are twice as likely to use chemical fertilizers but somewhat less likely to use manure. Overall the evidence suggests that the project is not having a strong impact on cultural practices or on adoption of new technologies in the project area. On-going participation in adult literacy classes is also weak.

The principal reasons for the lack of progress in the extension and literacy programs are administrative and management related. Key production inputs do not arrive on time. The extension service often does not have adequate resources to permit effective operation, supervision and control of

extension activities. Poor financial management within PIDAC disrupts training programs for extension agents. Finally, ineffective personnel management does not generate a sense of responsibility among many project personnel.

On the technical side the effectiveness of some of the extension themes under farm conditions in particular parts of the project area is questionable. Flat plowing does not work the soil as much as traditional methods with the result that weeds are more of a problem. The reasons that farmers resist adopting thinning and more frequent weeding are not clearly understood.

The price for maize appears to be constraining the expansion of maize production.

VII. Has the project set forces into motion that will induce further exploration of these constraints and improvements to the technical packages proposed to overcome them?

The ISRA farming systems research team is exploring problems with the agricultural production technical packages and cultural practices. There is every reason to believe that this activity will continue, provided financing is available. However, the GOS is not a dependable source of operating cost support and it does not seem likely that ISRA will be any more effective than other services and projects in obtaining the operating inputs it needs once donor support ceases.

VIII. Do private input suppliers have an incentive to examine the constraints addressed by the project and to come up with solutions?

Generally, no. There has been some stimulation of the private sector in multiplication and distribution of improved seed but this activity almost certainly will not be able to continue functioning without an active research program supported by ISRA and much higher official prices for seed than for grain for consumption. In other areas such as the supply of inputs, credit and marketing services, the private sector could play a stronger role if the project included transportation and other costs in setting prices for inputs; made interest an explicit charge for inputs purchased on credit; and charged a higher price for inputs delivered to villages than for those picked up at central depots. As the producer groups become stronger, input suppliers may become interested in dealing directly with them on a cash basis.

The GOS could remove its restrictive licensing requirements for private sector trade in cereals so farm prices could rise and stimulate adoption of improved technologies.

The adult literacy program will eventually be transferred to the villagers themselves. Without public sector support in the form of materials for continuing education this program will probably die.

IX. What delivery system is the project employing to transfer technology to the intended beneficiaries?

The project serves the function of middleman between input suppliers and farmers. Animal traction equipment, fertilizer, insecticides and improved seeds are distributed by the extension agents to the president and secretary of farmer groups. Organized for the purpose of ordering and distributing inputs and credit to individual members, these groups are still weak. They require a great deal of assistance from the extension agents to carry out their functions. Supervision of input supply and credit activities is the responsibility of the zonal intendent, a project employee.

The project uses its own extension agents to instruct farmers on the proper use of new techniques, inputs and varieties. The service works primarily through the farmer groups which are also responsible for organizing extension service contacts with farmers. These contacts consist of monthly meetings, periodic demonstrations of specific cultural techniques and farm visits.

The project employs the "cascade system" of extension in which a few highly trained specialists train zonal chiefs who, in turn, train the extension agents for onward transmission to farmers. The system is almost entirely verbal and results in substantial losses in knowledge at each level of transfer. For some practices, such as weeding with animal traction, many agents do not have the skills necessary to teach farmers.

What training techniques does the project use to develop the delivery system?

A majority of extension agents and literacy teachers have attended formal post-secondary agricultural training institutions. Nevertheless, their level of training is frequently weak, especially on the practical side. The project has programmed three five-day training sessions each year for the zonal chiefs and the zonal intendents. Because of financial management problems, however the number actually held is usually less. Training of the extension agents by the zonal chiefs should normally occupy 10 days per year but, for the same reasons, the training program is generally only about 1 accomplished each year.

Training techniques involve verbal presentation of the theory of a particular practice, followed by field demonstrations by the course instructors. Each participant then uses the technique himself but the level of skill acquired is sometimes weak.

XI. What effect did the transferred technology have upon those impacted by it?

It is not possible to answer this question with certainty. At this time the effect does not appear to have been very great. Empirical data substantiates the positive effect on yields of early planting, use of fertilizer and the number of weedings for most crops. What is not known is what farmers give up on other crops in order to enable them to adopt these changes. There is no obvious impact on the rate of emmigration or on the nutritional status and aggregate income of adopters. It is likely that the lack of inputs, insufficient attention to training and poor supervision and control of the extension program have created a situation where the amount of farmer contact time by agents is low and the quality of what contact does occur is poor. This is equally true of the adult literacy program.

Other new technologies, such as the anti-salt dams and solar ovens, have not been in place long enough to expect concrete changes in production patterns or other household behavior at this time.

ABBREVIATIONS

ADRAO	Association pour le Developpement du Riz en Afrique Occidental
ANOVA	Analysis of Variance
ATA	Agent Technique d'Agriculture
COF	Controle des Operations Financières
DAF	Direction Administrative et Financière
DAR	Direction des Amenagements Ruraux
DEEP	Direction des Etudes, d l'Evaluation et de la Programmation
DGPA	Direction Generale de la Production Agricole
DTO	Direction Technique des Operations
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization
GOS	Government of Senegal
GP	Groupement de Producteurs
IITA	International Institute for Tropical Agriculture
ISRA	Institut Senegalais de Recherches Agricoles
ITA	Institut de Technologie Agro-Alimentaire
MAC	Mission Agricole Chinoise
MDR	Ministére de Developpement Rurale
NCNW	National Council of Negro Women
ONCAD	Office National de Cooperation et d'Assistance au Developpement
PIDAC	Projet Intégré de Developpement Agricole de la Basse Casamance
PP	Project Paper
PPNS	Programme de Protection Nutritionnelle et de la Santé
PRS	Projet Rural de Sedhiou
PV	Protection des Vegetaux
SAED	Société d'Aménagement et d'Exploitation des Terres du Delta

SOMIVAC	Société pour la Mise en Valeur Agricole de la Casamance
SONAR	Société Nationale d'Approvisionnement Rural
UNESCO	United Nations Education, Scientific and Cultural Organization
UPR	Unité de Plannification Régionale
USAID	United States Agency for International Development
WID	Women in Development

SUMMARY OF IMPORTANT FINDINGS AND RECOMMENDATIONS

Implementation of the Casamance Regional Development Project has faced continual delays and obstacles since it began in 1978. Five years after its beginning and two years from completion of an extended first phase, the project is, according to PIDAC's own data, having very little impact on agricultural production as compared to results obtained by farmers at large. A more generous analysis that combines data on cultural practices among PIDAC assisted farmers with assumptions concerning the likely impact on yields of these practices indicates a maximum increase in agricultural production of 4000-5000 tons of cereals per year due to the project, as compared with 11,000 tons originally projected by the end of the first five year phase. Other activities of the project, with the possible exception of the applied research program at ISRA, are achieving equally disappointing results.

The lack of progress in project implementation and project impact arises more from administrative and management problems than from glaring defects in the technological packages. The more important of these include:

1. The legal statute under which SOMIVAC operates which imposes on projects administrative procedures for ordering inputs and managing personnel that are incompatible with agricultural production and development.

2. The unreliability of GOS counterpart contributions. USAID has made these on behalf of the GOS over each of the past two years.

3. The lack of necessary operating inputs and timely material support for important project activities. This results partly from the first two problems.

4. Weak planning and the lack of work plans and monitoring systems for improving project performance.

5. The absence of incentives for good work and effective sanctions against low productivity and negligence by project employees.

Most of these problems are common to all public sector rural development projects in Senegal and reflect a general lack of monetary, fiscal and administrative discipline within the public sector. They are not project specific weaknesses that can be addressed by more technical assistance, training or development financing. The Director General of SOMIVAC, newly appointed since the fall of 1982, is aware of these problems and has taken several measures to deal with them. He is, however, limited in what he can do by SOMIVAC's legal status. He will need the strong support of USAID to induce the GOS to make necessary changes. This will probably require new legislation that defines SOMIVAC's responsibilities in such a way that it can delegate much greater administrative, financial and management autonomy to PIDAC. Alternatively, SOMIVAC may have to be dissolved and PIDAC reconstituted as a fully donor-financed autonomous project under the coordination of the Regional Development Committee. Unless these problems are resolved, the evaluation team sees little reason to continue financing PIDAC.

A. Project Administration and Management

The evaluation team did not include a specialist in development administration. There are, however, several changes that appear essential to the team if SOMIVAC and PIDAC are to become an effective development planning-implementation combination in the lower Casamance:

1. A very large degree of administrative and management autonomy for the Director General of SOMIVAC.

2. Delegation of much greater autonomy for program development, financial management, acquisition of inputs and program execution to PIDAC. SOMIVAC headquarters and its technical directorates should limit their responsibilities to planning,

approval of work programs, insuring the integrity of the supervision and monitoring programs of the projects and conducting large scale technical studies. This will require strengthening of PIDAC's project management capabilities.

3. Creation of a Planning and Programming Committee within SOMIVAC. This committee would identify promising investments and studies needing to be undertaken and would integrate and coordinate the work plans and actions of the various directorates of SOMIVAC and the implementing agencies (PIDAC).

In addition, SOMIVAC, if it remains as a regional development organization, and PIDAC should:

4. Institute systems of management by objectives in order to better define the work programs of each technical assistant and each Senegalese technician.

5. Provide all project technicians with the necessary resources to achieve their work programs as finally accepted by their director of service.

6. Establish a personnel evaluation system based on achievement of work plans and related to this, a system of performance incentives that includes access to internal advancement and productivity bonuses.

7. To resolve its own internal management problems the team recommends that PIDAC create a Project Management Committee consisting of the Director of PIDAC, a senior monitoring and management specialist to be attached to a proposed PIDAC Monitoring and Liaison Unit, all division directors, PIDAC's chief accountant and the USAID Project Manager. The committee will assist the Director of PIDAC to plan, coordinate and monitor project activities, identify problems of management and propose solutions.

8. In exchange for the legal and administrative changes necessary to implement these recommendations, and recognizing the low priority the GOS gives to meeting project counterpart

contributions, the team recommends that USAID offer to make a long term (15-20) year commitment to support PIDAC. This should include a willingness to finance 100% of PIDAC's non-salary operating costs--including the GOS counterpart contribution--until such time as the GOS on the one hand, and the paysants on the other, have the capacity to assume this responsibility effectively. To the extent that salaries are being paid at the present time, USAID should offer to replace these over time with an equal or greater amount of operating support for SOMIVAC or other sub-regional projects. It is imperative that the government not be freed of the fiscal discipline of having to meet the wage bill for all public and para-public employees if the spirit of the economic recovery plan imposed by the IMF is to be maintained.

9. Should SOMIVAC be recast so as to function more effectively, USAID should agree to contribute one-fourth of its annual operating budget in the form of non-salary operating costs for a streamlined operation. This would represent the proportionate share of headquarter's costs attributable to PIDAC and would help SOMIVAC sustain its autonomy.

10. USAID should strengthen its own administrative and accounting services so as to insure support for project financial accounting systems and more effective control over project expenditures. It should also insist on a stronger role in project management via participation of the USAID project manager on the PIDAC Project Management Committee.

These recommendations, taken together, offer the potential for eliminating many of the administrative and resource flow problems that have impeded the accomplishment of project goals thus far. By concentrating project resources in non-salary operating cost categories neglected by the GOS, USAID can facilitate an economically more rational allocation of resources available for agricultural development.

B. Program Implementation

Several aspects of programs already underway need strengthening or modification to render the programs more effective. Detailed recommendations are included in each section. The more important ones are summarized below.

1. PIDAC should cautiously experiment with the effectiveness of female extension agents by assigning at least one to each zone. The importance of women to agricultural production in the Casamance suggests that the potential gain from reaching a heretofore neglected group may outweigh the difficulties of keeping female agents in rural areas.

2. The Extension Division of PIDAC should initiate an on-farm testing program in collaboration with ISRA in order to verify the effectiveness of proposed extension themes prior to extending them to farmers in particular zones. Many themes that have a demonstrated substantial positive impact on crop yields are not adopted by farmers to the extent one would expect. Such testing will facilitate a close examination of ecological and sociological aspects of the themes and, hopefully, provide information leading to the elaboration of more acceptable approaches.

3. PIDAC should give firm instructions to zone chiefs and extension agents to prepare and maintain demonstration plots in farmers fields. That will permit the agents to gain farmer's confidence and will facilitate an objective evaluation of the technical competence of the extension agent.

4. PIDAC should regroup the training, literacy and women in development sections of the extension division into a single division of training on a level with the other divisions of PIDAC. It should insure that this division has a functioning audio-visual unit. Both these actions are necessary to insure that training, literacy and women's programs receive the attention they deserve and become fully integrated with all of the project's activities.

5. PIDAC should regroup all village level extension agents within a zone into a single interdisciplinary team including WID, livestock and literacy training agents. This will better insure integration of its diverse activities and programs at the local level. Each agent should have supplemental training in the specialties of the other members of the team in order to better identify when his/her assistance might be useful.

6. The Literacy Section of PIDAC should reinstate literacy training for the presidents and secretaries of the producer groups and begin planning now for the progressive transfer of literacy training to the villagers themselves. This group is crucial for the success of the project's input supply and credit programs.

7. PIDAC should accelerate the establishment of the seed farm and strengthen the production of seed on contract by producer groups by assigning more competent staff. The seed farm should be placed under the direction of a highly qualified Senegalese with supervision and support provided by the plant protection technical assistant. This should help contain the number of technical assistants in the project without reducing the quality of the seed production program.

8. PIDAC should integrate all its credit programs into a single program with common terms. The terms should include refusal of new credit to any individual in a producer group that has not paid at least 95% of all outstanding principle and interest due as of the date the new credit would become effective. The programs should charge a common interest rate and require a minimum down payment as a condition for obtaining credit. Without these changes PIDAC risks getting swamped with an unnecessarily complex system of record keeping for its credit programs. It will also be inviting farmer abuse and a breakdown in the discipline necessary to assure the financial viability of the program.

9. USAID should provide technical assistance to the section of Promotion Féminine at PIDAC. The action program of the

section lacks a clear conception of where it should be going and how it should get there.

10. PIDAC should reconstitute its monitoring unit as a Monitoring and Liaison Unit responsible directly to the Director of PIDAC. The unit should have responsibility for establishing feedback mechanisms for regularly monitoring the effectiveness of the many activities of the project. This same unit should be responsible for on-going liaison with the ISRA farming systems team.

11. USAID should recruit a senior expatriate specialist in monitoring and management for the PIDAC Monitoring and Liaison Unit. In addition to directing the activities of this unit during its formative period he/she would serve on the proposed PIDAC Project Management Committee and would provide on-going assistance in research design and analysis methodologies to the DEEP Evaluation Unit.

12. DEEP should reduce the data collection activities of its Evaluation Unit over the next several months in order to permit a more complete analysis of data already collected and to facilitate the evolution of data collection and analysis methodologies more likely to permit a definitive evaluation of the impact of specific project activities.

13. USAID should replace the statistician currently assigned to DEEP with a senior Senegalese or expatriate specialist in social science research design and research methods to help Senegalese researchers at DEEP become disciplined, efficient researchers.

14. SOMIVAC and ISRA should modify the protocol creating the Research and Development Committee so as to incorporate all heads of the technical divisions in the implementing agencies as statutory members. Working sessions of the Committee should be organized around individual implementing agencies.

15. The Project should establish a prototype testing fund to facilitate field testing for prototypes of seemingly promising investments under actual field operating conditions.

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I. INTRODUCTION

A. Résumé de Termes de Référence

L'Equipe d'Evaluation devrait comprendre une spécialiste en suivi-évaluation, un agronome, un spécialiste en formation, un économiste, deux sociologues, une anthropologue, un agro-économiste, un ingénieur civil et un spécialiste en logistique dernier n'étant pas arrivé, la partie le concernant a dû être laissé de côté.

Les termes de référence de l'évaluation étiant les suivants:

1. Evaluer les systèmes actuels de culture dans les 14 zones d'intervention du PIDAC et procéder à une comparaison de la production des campagnes agricoles 1980, 1981, 1982.

Comparer également la production des unités de production bénéficiant d'un encadrement et celles qui n'en ont pas. Faire des recommandations en ce qui concerne l'accent qu'il faudra mettre dans l'avenir sur les stratégies de production. Evaluer également l'application des recommandations contenues dans la dernière évaluation en ce qui concerne la fourniture des facteurs de production aux paysans.

2. Evaluer les efforts du PIDAC dans le domaine de la vulgarisation agricole. Ceci comprendra une évaluation des techniques actuellement recommandées par les agents du PIDAC, notamment la protection des cultures et la volonté des paysans d'accepter ces techniques. Ceci comprendra également une évaluation des efforts entrepris par le PIDAC dans le domaine de la multiplication des semences.

3. Etudier les organisations villageoises existant dans les 14 zones d'intervention du PIDAC et faire des recommandations concernant les éventuelles activités futures impliquant les organisations villageoises. Ce volet de l'évaluation comprendra, également, une appréciation des rapports existant entre les agents du PIDAC et les Groupements de Producteurs.

4. Evaluer les efforts du PIDAC dans le domaine de l'alphabétisation fonctionnelle, notamment la formation en gestion et comptabilité assurée aux responsables des Groupements de Producteurs.

5. Evaluer le commencement du volet crédit spécial par le PIDAC.

6. Evaluer les efforts du PIDAC avec le Volet Féminin.

7. Evaluer les efforts entrepris par l'ISRA/Djibélor dans le domaine de la recherche appliquée dont les résultats peuvent être utilisés par la SOMIVAC et le PIDAC.

Comparer les recommandations de la dernière évaluation en ce qui concerne la recherche et les travaux actuellement en cours.

8. Examiner le système de suivi et l'évaluation mis en place à la SOMIVAC. Ceci inclura une analyse des dispositions prises pour la collect des renseignements concernant la commercialisation et la production.

9. Evaluer la capacité de la DEEP d'entreprendre la planification et la conception des projets.

10. Evaluer les efforts du projet dans le domaine de la formation à court et à long terme, le recyclage et l'utilisation par les agents des gens formés à leur retour au service.

11. Evaluer la valeur des études financées par le projet (par exemple HARZA, NCWN, Timberlake, DIALLO). Evaluer l'efficacité de la cellule régionale de recherche et développement permettant d'éviter les doubles emplois au niveau de la recherche.

12. Evaluer la valeur et la réalisation de l'assistance technique offertes à la SOMIVAC, au PIDAC et à l'ISRA/Djibélor y compris la formation des homologues.

13. Evaluer l'entretien du matériel fourni par l'USAID à la SOMIVAC, au PIDAC et à l'ISRA/Djibélor.

14. Evaluer l'entretien par chaque agence de la construction financée par l'USAID.

15. Evaluer la gestion du projet: notamment son efficacité et la disponibilité des moyens d'exécution (SOMIVAC, USAID, PIDAC, ISRA/Djibélor).

16. Comparer les résultats déjà obtenus aux prévisions des objectifs devant être atteints à la fin du projet, ceci a la lumière de l'expérience à ce jour.

Déterminer les causes des variations des indicateurs principaux du projet, les variations entre les objectifs et les réalisations et si nécessaire recommander des modifications.

B. Le Projet

La durée du Projet de Développement Régional de la Casamance a été prévue pour 5 ans (1978 à 1983) puis prolongée jusqu'en août 1985, dans le cadre du même budget. Le financement global du projet est de 23 millions de dollars sur le côté USAID et 10.8 millions de dollars pour le côté du Sénégal.

Le projet est destiné à accroître la production agricole en Basse Casamance par le renforcement de la Société Régionale de Développement (SOMIVAC) et de son organe de vulgarisation/encadrement (PIDAC), en liaison avec l'expérimentation et les essais sur le terrain menés par l'ISRA. L'objectif indirect est l'amélioration du niveau de vie des populations rurales. Le Diagram I-1 donne l'organigramme de la SOMIVAC telle qu'il était pendant la période d'évaluation.

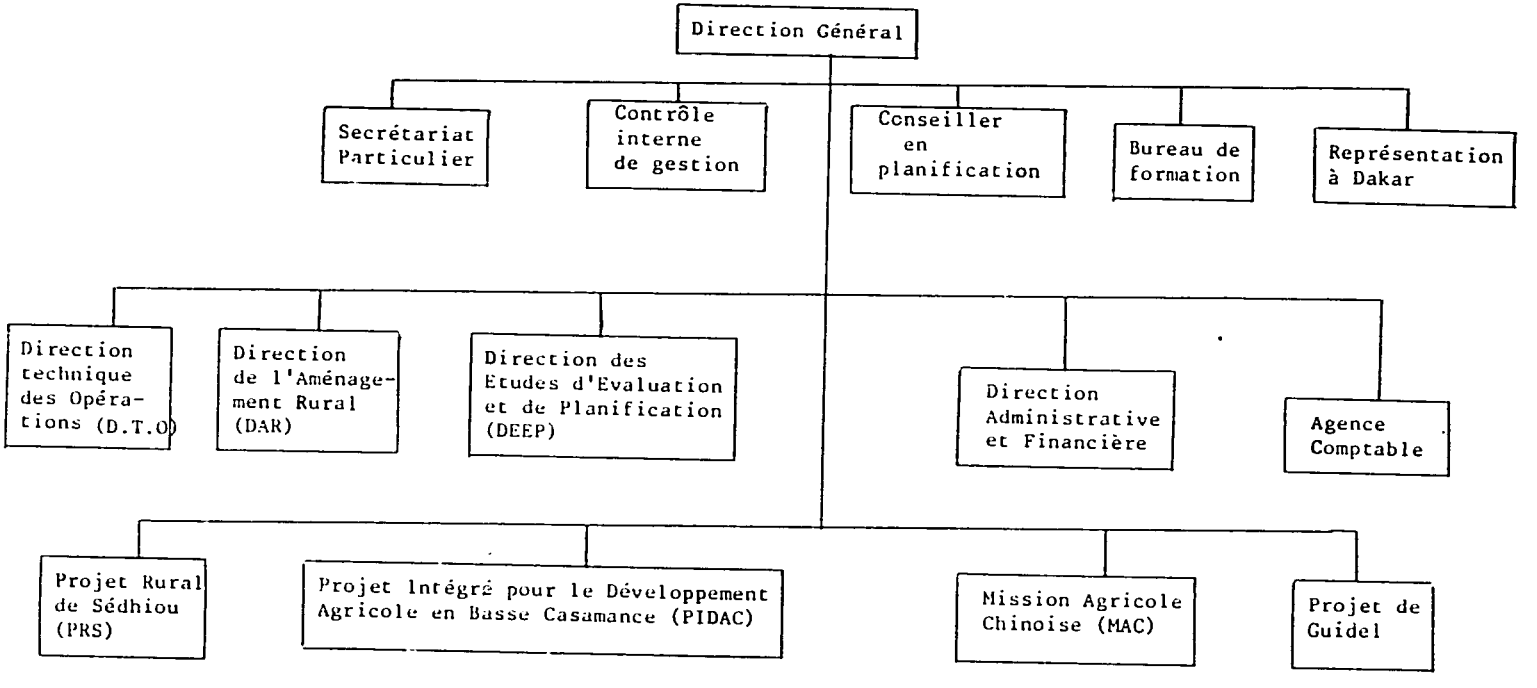
L'USAID fournit de l'assistance technique à la SOMIVAC, au PIDAC et à l'ISRA/Djibélor, et du matériel technique et du soutien financier au PIDAC et à l'ISRA/Djibélor. Pour la campagne agricole 1982/83, le PIDAC a travaillé avec les paysans locaux sur 4.377 ha de riz et 1.773 ha de maïs de même que sur leurs cultures d'arachide et de mil.

Un Plan Directeur traitant des contraintes de la production agricole en Basse Casamance et du Développement général de la région destiné à la SOMIVAC est actuellement élaboré par la Compagnie Internationale d'Ingénierie, HARZA de Chicago.

Les autres activités du projet comprennent l'implantation d'une ferme de production de semences de 100 hectares; la mise au point d'un programme d'alphabatisation fonctionnel dans les langues locales; la formation de Groupements de Producteurs en vue de gérer les facteurs de production et les crédits agricoles; la construction de magasins au niveau des villages et de la zone, aussi bien que l'aménagement de digues anti-sel; l'examen de l'impact sanitaire du barrage de Guidel dont la construction a été financée par la Banque Africaine de Développement; l'étude du rôle socio-économique des femmes en Basse Casamance; la construction d'un bâtiment à usage de bureaux pour le centre de formation; des laboratoires et d'autres installations destinées à la SOMIVAC, au PIDAC et à l'ISRA.

Les activités de vulgarisation comprennent aussi le travail avec les groupements de femmes en vue d'augmenter les cultures maraîchères et de renforcer les activités pilotes impliquant la conservation des fruits et des légumes;

Diagram I-1: Organigramme de la SOMIVAC



la vulgarisation de l'élevage et du petit élevage et la création d'un volet destiné à rendre disponible des prêts pour l'acquisition du matériel agricole. Un volet santé est en cours d'élaboration.

C. Les Organismes de Développement Rural en Casamance

La SOMIVAC (Société de Mise en Valeur Agricole de la Casamance) est actuellement une entreprise publique à caractère industriel et commercial, créée par un décret du 24 juillet 1976. Elle est chargée de la planification, de la coordination et du contrôle du développement rural de la Casamance, sous la tutelle du Ministère du Développement Rural.

Le PIDAC (Projet Intégré pour le Développement Agricole en Casmance) existe depuis 1974 et il est devenu l'agence de la mise en place des projets agricoles dans la sous-région de la Basse Casamance de la SOMIVAC. Il est donc supervisé et contrôlé par celle-ci, mais après avoir eu l'accord de la SOMIVAC pour son programme, le PIDAC garde, en principe, son autonomie dans la gestion de ses propres budgets et programmes.

L'ISRA (Institut Sénégalais de Recherches Agricoles) est un organisme national de recherche, dont le Centre de Djibélor, en Casamance, après avoir porté des recherches principalement sur le riz, les étend maintenant aux autres cultures et à la recherche sur les méthodes culturales. Il dépent administrativement du Directeur Général pour la Recherche, les Sciences et la Technologie du Ministère de la Recherche.

D'autres services régionaux "traditionnels" intéressés à différents titres au développement rural existent en Casamance et sont composés d'un ou de plusieurs inspecteurs pour chaque ministère et de leur personnel, tels que les inspections régionales du Ministère du Développement Rural, du Ministère de la Santé et du Ministère de l'Action Sociale (ex-Promotion Humaine).

Pour l'intégration de tous les services et des activités gouvernementales dans la région, c'est le Gouverneur qui en est responsable et en réfère du Ministère de l'Intérieur.

D. Les réalisations du PIDAC pour la Période 1979/82

Le Tableau I-1 donne le bilan global du PIDAC (1979 - 82) par rapport aux caractéristiques principales de la Basse Casamance et sert de référence aux développements et explication détaillées qui sont données dans les différentes sections spécialisées du Rapport d'Evaluation.

Pendant la saison culturale de 1982/83, le PIDAC travaillait avec plus de 13.000 ménages en Basse Casamance, soit à peu près 40% de la totalité des ménages ruraux dans la sous-région. Pour porter ses activités aux 234 groupements qu'il a pu reconstituer ou former, le PIDAC se sert de 70 encadreurs de base. Ce sont ces encadreurs qui sont les homees-clé pour les objectifs du projet dans le domaine de la production agricole.

TABLE I-1: Achievements of PIDAC, 1979 - 82, as Compare to the Total Population of the Project Area a)

Description	Entire Area	PIDAC Only			
	1982	1979	1980	1981	1982
Total population	200,000 b/				82,475
Number of active farmers	160,000 c/	6,630	9,930	48,153	60,019
Households	31,700 d/	1,052 d/	1,576 d/	7,643 d/	13,089
Villages	400 d/	261	273	361	N/A
Farmer Groups (G.P.)	N/A	162	202	234	234
Extension agents	N/A	30	50	65	70
Literacy Program Enrollment	N/A	-	-	428	724

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a/ Excludes Niaguis arrondissement, currently covered by MAC. Niaguis had an estimated 1982 population of 31,600 with 21,900 active farmers in 5,000 households.

b/ Taken from Annex III of SOMIVAC-PIDAC-ISRA (1983)

c/ Calculated using ratio of active to total population as found in SOMIVAC-PIDAC-ISRA (1983) Annex III.

d/ Calculated using PIDAC estimate of average household size of 6.3 persons, the basis of its own figures for 1982.

II. LA PRODUCTION AGRICOLE DANS LA BASSE CASAMANCE

A. Systèmes et Techniques de Production

Les exploitations rencontrées en Basse Casamance sont de type familial. La famille est regroupée au sein d'un carré et composée en général du chef (père), de la mère et des enfants. La famille a des terres qu'elle exploite ensemble et individuellement. Le PIDAC travaille avec les Groupements des Producteurs (G.P.) au niveau du village. L'encadrement se fait au niveau de l'individu ainsi qu'en groupe.

1. Les Cultures de Plateau

L'arachide est une culture importante dans toutes les zones agricoles. Elle occupe 30% des superficies exploitées. A l'exception des zones qui ont d'importants problèmes de terre, l'arachide est la culture prépondérante sur le plateau. Elle est, en général, en association avec le sorgho et le mil. Le rendement moyen de l'arachide est de l'ordre d'une tonne à l'hectare. Les cultures secondaires ont un rendement moyen généralement faible de l'ordre de 100 Kg/Ha.

Le maïs qui peut être une culture nouvelle en Basse Casamance, a gagné du terrain par rapport au mil et sorgho. Les rendements se situent aux environs de 900 Kg/ha. Le maïs dans un premier temps joue le rôle de culture de soudure, il est semé tôt. Les chiffres globaux du PIDAC montrent que les superficies ensemencées en maïs par ses paysans encadrés sont passées de 112 ha en 1979 à 1.773 ha en 1982. La plupart de cette augmentation est due au projet.

Le mil et le sorgho sont plus importants que le maïs dans les zones à sols sableux et à pluviométrie limitée. Ces cultures occupent, dans ces zones, à peu près 35% des surfaces cultivées. Les rendements sont de l'ordre de 700 Kg/ha. Comme le maïs, le mil et le sorgho peuvent avoir une place intéressante dans les systèmes de production des paysans. Sa culture est en effet, toujours possible, même si les semis des plateaux sont décalés dans le temps du fait de l'arrivée tardive des pluies.

Le riz pluvial strict ne couvre en fait qu'une superficie limitée de 25-35% des surfaces rizicoles. Les rendements moyens sont de l'ordre d'une tonne à l'hectare. Le niébé, la patate douce et le manioc sont généralement localisés dans les jardins de case.

En général, le labour commence avec les pluies de fin juin et début juillet. En dehors du riz pluvial strict, les champs de plateau sont labourés en billons et non à plat par 80% des paysans. Cette méthode leur permet, en effet, de mieux en fournir les mauvaises herbes et d'effectuer le labour plus rapidement. L'arachide est une culture de rente mis en place généralement sur des jachères de courte durée tandis que le riz pluvial est souvent semé sur des jachères de longue durée. Les cultures de plateau bénéficient généralement d'un seul sarclage. Le gardiennage est peu important.

2. Le Riz de Nappe

Le riz de nappe est prédominant dans les zones où le sol est abandonné au profit du semis direct à la suite des sécheresses de ces dernières années. Il n'est généralement sarclé qu'une seule fois. Les rendements varient de 500 à 3,200 Kg/ha selon la situation topograhique des rizières. Le riz de nappe est très important dans le sud du fleuve en zone de forêts.

3. Le Riz Aquatique

Le riz aquatique est la spéculation la plus ancienne en Basse Casamance. Cette culture se pratique dans les zones qui restent submergées durant une bonne partie de l'hivernage. Elle constitue l'activité principale des femmes. La plupart des superficies exploitées sont labourées manuellement. Le repiquage intervient après submersion. Les rizières aquatiques sont en général assez petites. Elles sont découpées par de nombreuses diguettes qui constituent des unités hydrauliques. Souvent, avant le labour, le fumier est répandu sur les parcelles.

Les pépinières sont semées en juillet sur de petites parcelles nouvellement défrichées ou dans les champs de case. Les variétés utilisées sont très nombreuses. Le repiquage intervient après la submersion et quand la rizière est assez lessivée dans le cas où il y a un problème de sel. Il intervient souvent très tard, 5 à 8 semaines après le semis. Le tallage ayant déjà commencé, ce repiquage tardif entrave le développement normal des plants.

Le sarclage n'est pas aussi nécessaire pour le riz aquatique que pour les cultures de plateau. La récolte est assurée par les femmes à l'aide d'un petit couteau panicule par panicule.

Dans les rizières avec des problèmes de sel et de fer les rendements varient de 200 - 600 Kg/ha. Celles qui connaissent une arrivée tardive des pluies où les

repiquages sont effectués en retard ont des rendements de l'ordre de 1000 - 1500 Kg/ha. Les rizières aux rendements élevés (2000 - 3000 Kg/ha) ne connaissent ni problème de sel, ni celui de fer et elles reçoivent un apport important de fumier et repiquage précoce.

B. L'Organisation Sociale de la Production

En Basse Casamance, l'organisation sociale de la production bien que revêtant des formes différentes suivant les particularités ethniques, repose sur l'articulation fondamentale entre une division du travail effectué sur des bases individuelles et une association collective du travail. Que ce soit au niveau élargie de la communauté ou du village ou à celui restreint de la famille, cette articulation est toujours une constante de l'organisation sociale de la production. Ainsi il mérite d'être intégrée dans l'évaluation des programmes de développement agricole.

1. Au Niveau du Village

Chaque famille constitue une unité de production destinée à assurer la satisfaction de ses propres besoins. La production agricole se réalise dans plusieurs champs familiaux suivant une organisation interne très fonctionnelle.

Mais en même temps que la famille constitue une unité de production indivuelle, il existe des associations traditionnelles regroupées sur des critères d'âge et de sexe et effectuant collectivement des activités d'entre-aide, de prestation de service et de production communautaire.

Ces cadres collectifs sont aussi et en même temps le lien d'une division et d'une répartition individuelle des tâches de production. Une organisation et une discipline souvent cimentée par des liens cultures et socio-affectifs assurent leur cohérence et leur opérationnalité.

2. Au Niveau de la Famille

La division du travail repose sur une répartition des tâches en fonction de critères de sexe. En général, partout en Basse Casamance, la production du riz est du ressort des femmes alors que les hommes s'occupent des autres cultures (mil, maïs, arachide) qui sont souvent destinés à la vente. Des nuances existent cependant, suivant les localités.

Le maraîchage dans toute la Basse Casamance est actuellement quasi-exclusivement effectuée par les femmes. La division traditionnelle du travail a toujours fixé le maraîchage domestique comme étant du domaine des femmes. Par ailleurs, le niveau familiale entretient toujours des relations avec les associations traditionnelles qui sont particulièrement actives chez les filles, les femmes mariées et les jeunes hommes.

L'étude de l'organisation traditionnelle de la production constitue en dernière analyse un élément important à prendre en considération dans l'introduction de programmes agricoles. Si non, on court le risque d'affecter certain équilibre traditionnel dans la répartition du travail social.

C. Agricultural Production, 1976-1982

Agricultural production in the Lower Casamance is dominated by the rains. Low rainfall does not provide sufficient sweet water runoff with the result that flood plain rice production is low. Up-land crops are dependent only on actual precipitation so production is relatively more stable than for rice. In years of good rainfall distribution, such as 1982, good results can be obtained even when total rainfall is below average.

Table II-1 presents area, production, yield and rainfall data for the Lower Casamance for the 1976-1982 period 1/. As can be seen from the table, agricultural production and yields vary enormously from one year to the next, largely in response to changes in rainfall. The data do, however, reveal an increase in agricultural production relative to available rainfall over this period, especially with respect to 1979 when rainfall was only about 6% below the seven year average and only 5% below the average of the last two years. One needs to be careful interpreting these data since 1979 followed a year of exceptionnally good rains in the post drought context. It is possible that carryover supplies had a negative influence on production in that year.

1/ Most of these date come from official MDR sources. They are based on sampling procedures that have been in place for several years. The data are felt to be accurate within ± 10%.

TABLE II-1: Area, Yield and Production for Principal Crops in the Lower Casamance a/ as Compared with Rainfall, 1976-1982

Crop	Estimate	1976	1977	1978	1979	1980	1981	1982	1976-82 Average
		YEAR							
Rice	Area (ha)	36 387	21 717	38 756	26 520	19 765	28 099	26 318	28 223
	Yield(Kgs)	1 243	907	1 389	941	269	1 373	1 325	1 126
	Prod (tons)	45 242	19 705	53 831	24 968	5 322	38 580	34 865	31 788
Millet/ Sorghum	Area	21 653	18 968	23 643	24 323	22 429	17 334	20 317	21 238
	Yield	603	661	730	823	540	887	733	708
	Prod	13 059	12 540	17 267	20 026	12 122	15 375	14 895	15 041
Maize	Area	1 263	1 411	2 030	2 732	5 060	6 523	5 492	3 502
	Yield	675	612	701	728	738	773	1 085	810
	Prod.	853	864	1 424	1 988	3 732	5 045	5 960	2 838
Peanuts	Area	26 220	19 898	32 767	24 359	17 105	19 993	24 964	23 615
	Yield	1 165	804	1 053	1 138	414	1 170	1 164	979
	Prod.	30 558	15 996	34 503	21 315	7 088	23 397	29 059	23 131
Total	Area	85 523	61 994	97 196	77 934	64 359	71 949	77 091	76 578
	Prod.	89 712	49 105	107 025	68 297	28 264	82 397	84 779	72 797
Rainfall (mm) b/		1 357	865	1 509	1 014	689	1 141	988	1 080

a/ Departements of Bignona, Ziguinchor and Oussouye

b/ Calculated by weighting each Department's reported rainfall by its proportion of total area in the five crops over the 1980-82 period, i.e. Bignona 45%, Ziguinchor 28% and Oussouye 27%. Rainfall figures obtained from Regional Inspection of Agriculture for all years except 1982. 1982 figures obtained from DTO [1983L]. The series from DTO are subtantially different from MDR figures for previous years for which they are available (1979-81).

Sources: 1976-1980 taken from Harza [1982b]. 1981 taken from Regional Inspection of Agriculture Annual Report. 1982 figures are preliminary estimates supplied by the Regional Inspection of Agriculture.
The Harza report [1982b] used DGPA official estimates.

Looking at average production over the past two years relative to the seven year average we see rice production up almost 16%, peanuts up 13% and maize up 72%. Millet and sorghum are essentially unchanged. There obviously has been some substitution of maize for millet and sorghum. Aggregate production of all five crops, which account for over 95% of cultivated area in the Lower Casamance, was up almost 15%. The quantity of rainfall is similar for both periods so these data presumably are measuring something other than the effect of the amount of rainfall. Partly, they are measuring an increase in labor time as farmers try to rebuild the stocks following the disastrous 1980 harvest. Partly they reflect the effect of an unusually good distribution of rainfall in 1982, especially as the crops matured. But there seems little doubt that agricultural production in the Lower Casamance is adapting to a changing climate and growing faster than the rural population.

D. Impact of the Project on Agricultural Production

Assuming that rural population in the Lower Casamance is growing at 1.5% per year as suggested in the Harza study, then the 1981 and 1982 average production should have been up by about 3.8% or 2800 tons over the 1976-1982 average, assuming no change in productivity per capita. Removing an additional 2000 tons for the effect of a short-term labor related concerted effort to rebuild stocks leaves an increase of 6000 tons which should be attributable to the project or otherwise explained. Given the decline in area planted of about 2 1/2% this means average yield per hectare must have increased on the order of 18% over the period.

Efforts to increase agricultural production in the Lower Casamance did not begin with USAID assistance to PIDAC. GERDAT began research on developing improved rice varieties in the early 1960's. ILACO launched an effort to extend modern cultural practices for rice production in 1968, and was working with over 7500 farmers before it shut down in 1974. PIDAC followed ILACO as a temporary project under the direction of the Regional Inspection of Agriculture even before SOMIVAC was created in 1976. It was distributing agricultural equipment and fertilizer through the ONCAD cooperative structure. At the same time, research stations at Sefa and Djibélor were producing improved varieties of peanuts and rice. Indeed, the technological packages being extended by PIDAC at the time formed the technical basis for designing the Casamance Regional Development

Project. Finally, SONAR continues to take responsibility for distributing seeds, fertilizers and plant protection materials for peanuts.

In addition to the cumulative impact of these previous activities has been farmers' response to the continuing subnormal rainfall. Rainfed rice and maize have grown in importance at the expense of aquatic rice and sorghum. The project has been encouraging this transition but, for pluvial rice at least, it began well before 1978.

How much impact these forces were having on agricultural production when this project began in 1978 and what would have been their cumulative impact in the absence of the project is a question that cannot be answered with precision. Nonetheless PIDAC's own production data provide some clues.

Table II-2 presents PIDAC production data taken from various PIDAC/SOMIVAC reports and compares these to official regional estimates for 1981 and preliminary estimates for 1982. The PIDAC data must be treated more carefully than the MDR data since sorting through PIDAC reports is, at best, confusing, and the data often contradictory 1/. The MDR data in this table does not include Niaguis arrondissement, which is part of the MAC project, in order to compare directly to the PIDAC data. The PIDAC data cover only farmers who are encadrés by PIDAC. Thus, as the number of PIDAC encadreurs increases, the amount of land encadré also increases. This does not mean that production also increases. Production only increases if PIDAC agents succeed in inducing farmers to adopt yield increasing production practices. Thus, the appropriate measure of project performance is the extent to which yields, and possibly area cultivated, among PIDAC farmers are higher than among non-PIDAC farmers.

1/ In looking at the report for the last quarter of 1982, for example, one finds production estimates for 1982 rainfed rice for PIDAC farmers which vary from 3217 to 4236 tons. The higher figure comes from applying the average yield for non-zero yield plots to the total area planted rather than the total area harvested. With only 75% of planted area actually being harvested this creates a subtantial upward bias in the production estimates. Fortunately, by the time these data filtered through to the DTO report covering the same period, the error had been spotted and corrected. For 1981 we have only the PIDAC [1982] data but without the details of how they were derived. Since both years experienced similar rainfall it is possible the data reflect the same confusion. The large errors in the 1979 data which are noted in the table suggest a general lack of care in preparing and/or proofreading tables for PIDAC reports.

TABLE II-2: Realizations of PIDAC, 1979-1982, as Compared to Regional Inspection of Agriculture Production Estimates for the same area, 1981-82.

Crop	Estimate	All Farmers a/ 1981	All Farmers a/ 1982 b)	PIDAC 1979	PIDAC 1980	PIDAC 1981	PIDAC 1982
Rainfed rice c/	Area (ha)	7443	6914	2170	2477	2213	2957
	Prod. (tons)	9439	8479	2170	1044	4116	3392
	Yield (kgs)	1268	1226	1000	421	1860	1147
Aquatic rice	Area	15112	14037	included with rainfed rice		1526	1420
	Prod.	22184	20017			2580	1857
	Yield	1468	1426			1690	1307
Millet/Sorghum	Area	8744	11604	20	619	2052	3266
	Production	7924	7382	16	419	1032	1920
	Yield	906	636	800	77 (677) e/	503	588
Maize	Area	5118	4129	112	1653	2357	1773
	Prod.	3361	4634	168	1471	3279	2112
	Yield	656	1122	1500	1491 (890) e/	1391	1191
Peanuts	Area	14130	18962	1732	986	3788	6613
	Prod.	15968	21946	1732	464	4303	7662
	Yield	1130	1157	1000	280 (471) e/	1136	1159
Total cereals	Area	50547	55646	4034	5735	11936	16029
	Production	58876	62458	4086	3398	15310	16943
Vegetables	Area	N/A d/	358	-	17	46	119
	Production	4189	N/A				

a/ Excludes Niaguis arrondissement, currently covered by MAC.

b/ Area, production and yield figures for the Lower Casamance Project area are preliminary estimates of the Regional Inspection of Agriculture excluding Niaguis arrondissement.

c/ Assuming 1/3 of total rice area is in rainfed rice and 2/3 in aquatic rice. Yield differences between the two are assumed to be 200 kgs/ha. in favor of aquatic rice. The figures for PIDAC for 1981 and 1982 are actual estimates.

d/ Taken from Jolly [1983].

e/ Actual yield if production and area data taken from PIDAC [1982] are correct. PIDAC data as reported are not internally consistent. The source of the error for maize and peanuts is unknown. For millet/sorghum a six was probably mis-typed as a zero so the 677 kgs/ha yield implied by area and production is probably correct.

Source Jolly [1983]; SOMIVAC/PIDAC/ISRA [1983]; Annexs II, III; DTO (1983b) Inspection Regionale de l'Agriculture [1981, 1982]; Division Agro-Vulgarisation [1983]; and PIDAC [1982].

The data in Table II-2 show essentially no difference in average yields between PIDAC farmers and non-PIDAC farmers for 1982. The 1981 sets of data also show no difference for peanuts and, like 1982, they reflect lower yields of sorghum and millet for PIDAC farmers. However maize and rice yields are much higher in 1981 1/. PIDAC was able to distribute 800 tons of fertilizer that year as compared to only 60 tons or so in 1982 so the rice figures, at least, are not out of the question 2/. They suggest an increase in production of rice of about 1700 tons in 1981.

For maize the situation is more complicated. If both the PIDAC and MDR data are correct, they would suggest that maize yields among non-PIDAC farmers were zero, since total production is the same in both cases. This does not seem very plausible 3/. In any case, there is a more than off-setting decline in millet/sorghum yields among PIDAC farmers. Finally, it is worth noting that PIDAC claims to be working with about 40% of all peasant households. Yet, its farmers account for only 27% of the total area cultivated in the zone. Either its agents are over reporting farmers who are encadrés or are under/reporting area cultivated. Overall, then, the PIDAC production data do not inspire a great deal of confidence in their accuracy. As they stand, they suggest an increase in 1981-1982 average cereals production of less than 500 tons per year relative to the Lower Casamance seven year average.

A second approach to estimating the impact of the project on agricultural production involves calculating increases in production arising from improved cultural techniques diffused by the project. This approach requires knowledge of 1) the effect of the practice on yield under farm conditions; 2) the total area on which the practice is applied; and 3) the area on which the practice would have been applied in the absence of the project.

1/ Given the problems noted in the previous footnote with 1980 and 1982 data from the same source and the lack of substantial difference in rainfall between 1981 and 1982, one must treat the 1981 PIDAC data with a good deal of reserve.

2/ The additional 740 tons applied 70% to rice as is suggested by the DEEP/PIDAC evaluation study would probably generate an additional 1500 - 2000 tons of paddy production under farm conditions when rainfall is relatively good as it was in 1981. This could explain the entire difference for rice.

3/ The MDR figure seems unrealistically low given rainfall levels. One wonders whether the yield figures for millet/sorghum and maize for 1981 were inadvertantly reversed in the MDR data, Since production is calculated as a residual this would make quite a difference in total cereals production.

To get a rough approximation of the maximum likely impact of the project on agricultural production Annex A uses this component approach. It combines data from the DEEP study with assumptions concerning non-project coverage and the impact of specific practices on yield to allocate the hypothetical increase to the project or to other sources. The increases obtained are then compared to the increases observed to test the reasonableness of the results.

On the basis of the analysis in Annex A we estimate the maximum likely impact of the project over the 1981 and 1982 production seasons to have been an increase of about 4000 tons of cereals per year over the without project scenario. If fertilizer use can be maintained at 800 tons per year as the subsidy is reduced in future years this would rise to 5000 tons in a normal (7 year average) year.

In addition, to cereals production, as much as 20% the 118 hectares of vegetable production currently encadré by PIDAC may be net new production through this estimate is probably high 1/. Promotion Humaine has been the real driving force behind this activity in the Lower Casamance and PIDAC has tendended to encadre groups of producers organized by that ministry.

Other areas of increased agricultural production include reclaimed lands and livestock production. Only a small area, less than 100 hectares, of reclaimed lands have begun producing anything at this time. The livestock projects all look uneconomic to the evaluation team, with the exception of animal health and water programs but they are, in any case, few in number.

Taken together these data seem to suggest that, though agricultural production in the Casamance is growing faster than population, the project is responsible for only a small part of that growth, from anywhere between zero to 4000 tons of grain production per year with the greatest probability being in the order of 2500 - 3500 tons. Compled with a possible 20% increase

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1/ Jolly [1983] gives historical production data on vegetable production in the Lower Casamance showing 1977 production being higher than 1981. Judging from the higher prices in local markets in 1982 relative to 1981, production in 1982 was probably lower than in 1981.

in vegetable production on land encadré by PIDAC and average yields on reclaimed lands the net value added by the increased production would probably amount to somewhere between 125-175 million F.CFA per year or $330,000 to $460,000 at todays exchange rate.

III. LES GROUPEMENTS DE PRODUCTEURS

L'organisation des groupements de producteurs (G.P.) a vu le jour à l'initiative du projet Hollandais ILACO. Le but des G.P. était de suppléer à la déficience des coopératives qui ne parvenaient pas à doter les paysans de facteurs de productions en temps utiles. Les G.P. regroupaient sur cette base les paysans désireux de recevoir des intrants agricoles et s'étant acquis d'une part sociale.

Les G.P. n'ont aucune existence juridique légale, ils sont appelés à disparaître avec la réorganisation du mouvement coopératif sénégalais. Cependant, actuellement ils constituent en principe des supports de base des programmes agricoles du PIDAC.

Selon les chiffres du PIDAC, il y a actuellement 34 G.P. en Basse Casamance, la plupart dans le département de Bignona. Certains d'entre eux n'ont en réalité qu'une existence théorique 1/.

Les difficultés de bénéficier de crédits agricoles de même que le coût jugé élevé des facteurs de production ont entrainé une désaffectation vis à vis des G.P. et perturbé leur dynamisme et leur fonctionnement.

Par ailleurs, les structures des G.P. ne sont pas facilement intégrées par les populations locales. Les femmes ne sont pas représentées dans les instances de direction. Par contre les associations traditionnelles semblent plus cohérentes et constituent des formes d'organisation très enracinées dans le milieu local.

A. Recommendation

La DEEP devrait étudier de manière approfondie la possibilité d'utiliser les organisations traditionnelles, dans une relation avec les G.P. permettant une combinaison et un renforcement de l'action du PIDAC.

1/ Dans la zone d'Oussouye, par exemple, sur 27 G.P. existant officiellement, seuls deux sont effectivement structureés.

IV. LA VULGARISATION AGRICOLE

A. L'Organisation du PIDAC

1. Structure

L'ensemble des services de vulgarisation du PIDAC est dirigé par le chef de la Division Agro-Vulgarisation. La Division est composée de sept sections au niveau du siège : une section agro-suivi, une section élevage, une section formation, une section protection des végétaux, une section production de semences, une section volet féminin et une section alphabétisation.

Au niveau départemental il y a trois chefs de vulgarisation qui dépendent directement du chef de la Division Agro-Vulgarisation. Le département de Bignona est divisé en deux coordinations, Est et Ouest. Le chef de la coordination Ouest est en même temps le chef départemental de Bignona.

Chaque coordination départementale est divisée en zones d'interventions. les zones étant divisées en secteurs de base dont les responsables sont des encadreurs de base. Les encadreurs travaillent directement avec les paysans qui sont organisés en Groupements de Producteurs (G.P.) au niveau du village. Il y a, au total, 70 secteurs de base.

Parmi les encadreurs on trouve des contractuels qui ont été récrutés et formés sur le tas, tandis que d'autres relèvent de la Fonction Publique Sénégalaise. Ces derniers sont des ATA et ont reçu une formation professionnelle. Selon plusieurs observations les contractuels sont en général plus motivés dans leur travail que les fonctionnaires.

2. Rapport Avec les Groupements de Producteurs

L'agent de vulgarisation a un certain nombre de relations de travail avec les G.P. C'est en consultation avec le président des G.P. que l'agent du PIDAC effectue le recensement de ceux qui désirent bénéficier du programme d'encadrement. Les paysans encadrés sont en principe membres des G.P. et les présidents des G.P. interviennent dans les contacts de l'encadreur avec les populations. (organisation de réunion de séances de démonstration, distribution de semences et d'engrais etc...). L'action des encadreurs devrait en principe s'appuyer sur les G.P.qui sont autonomes par rapport aux cooperatives. Mais avec la faiblesse de l'orgnisation des G.P., les agents de vulgarisation ont des contacts directs avec les paysans même non membres des G.P.

Table IV - 1 Présents data from the recent evaluation study of PIDAC carrried out by the Direction des Etudes d'Evaluation et de la Planification (DEEP). It confirms that an important number of non- G.P. members benefit from the extension activities of PIDAC. On the basis of these data it appears that 10-20% of the agents' contact time is spent with farmers who do not belong to a G.P. Overall, PIDAC effectively works with someone in about 40% of all households, though the frequency of contact may be only one meeting or visit per year. About 45% of the members of the G.P. do not have direct contact with a PIDAC extension agent.

TABLE IV-1: PERCENT OF HOUSEHOLDS HAVING CONTACT WITH PIDAC EXTENSION AGENTS BY MEMBERSSHIP IN A PRODUCER GROUP AND BY TYPE OF CONTACT, 1982

	Percent of All Households a/					
	by Producer Group		by Type of Contact			
Type of Contact	Member	Non Member	Meeting or Visit	Demonstration Only	None	Overall
Sample population (N = 1995)	58	42	38	18	44	100
			Percent of Sub-group b/			
Meeting	48	14	N.A.	0	0	34
Farm Visit	38	8	N.A. c/	0	0	26
Either Meeting or Visit	N.A.	N.A.	100	0	0	38
Demonstration			N.A	100	0	
Fertilizer application	68	15	76	91	-	45
Thinning	35	5	46	29	-	23
Herbicide Application	12	0	16	5	-	7
Insecticide Application	53	12	65	79	-	39
Flat Plowing	47	10	57	55		32
Direct Seeding	69	12	72	83	-	42

a) Unless otherwise specified
b) i.e. percent of those attending a meeting or visit or a demonstration only who saw the particular demonstration indicated
c) Not available.

SOURCE: Préliminary results of DEEP evaluation study.

B. Extension Management

In theory each extension agent has a set of three note books. In one they record data gathered on area in production, orders for fertilizer and other information on the individual farmers with whom they are working in each G.P. In a second note book the agents record their daily activities. A third book records the observations of supervisors and other technicians who visit the agents in the course of their duties.

Each month the agents meet with their zonal chief to review the extension themes that require diffusion for that month. They also establish individual work programs for the month. The work programs for each encadreur are recorded by the zonal chief but he does not send a copy to his departmental or Section Chief. Supervisors checking on the work of the agents must first go to the residence of the zonal chief and find him before they can supervise the activities of the agents in his zone.This leads to a good deal of unproductive running around.

Supervision of the zonal chief occurs through visits by the Departmental coordinator and by the section chiefs from PIDAC headquarters The agents themselves are supervised by all these plus their zonal chiefs. The ratio of supervisory personnal to extension agents (chefs du secteur) is more than 1:3 in PIDAC alone. Including technical personnel in administration and at SOMIVAC, the ratio exceeds 1:2. This is rather top-heavy to say the least.

Field trips by PIDAC technical staff are not well coordinated. Partly this arises from the failure of the division chiefs to prepare and share bi-weekly or monthly work plans. The chief of the extension division also does not consistently insist on monthly work plans from his staff. Problems also arise from the unplanned commandeering of vehicles assigned to the section by someone higher up the line of authority. This prevents many plans from being realized.

The extension division also lacks a system for consistantly reporting what was accomplished on field trips or recording observations on the work of each agent visited. This would be useful both for managing work programs and for controlling use of vehicles.

This PIDAC extension management system is not very effective. The lack of notebooks and better programming of available vehicles prevents closer checking on extension agents' activities to see what the peasants learned and to evaluate help provided by supervisors. To correct these problems the Division of Agro-Vulgarisation should spend more time planning and coordinating the activities of its sections. To do this the division chief must spend less time in the field and rely more on effective internal monitoring and feedback mechanisms.

The first place to start is to make extension agents responsible for buying their own notebooks until input purchasing problems are solved. They should held fully responsible for recording all daily activities and keeping these records up to date. Every quarter these should be turned over to the Monitoring and Liaison Unit that we propose be created in PIDAC. With a well thought our recording system PIDAC could use notebooks to develop operational norms for its agents and obtain continual feedback on how they are being met. If tied to an effective system of work plans, performance incentives and supervision, the PIDAC extension service could realize much more of it potential. Until more evidence suggests that this indeed is occuring the team does not support the recommendation of the last evaluation team that the number of field agents be increased beyond the 70 currently in place, with the possible exception of absorbing agents now working under the MAC. In those areas where agents are spread too thin PIDAC should reduce the number of villages in which the agents are assigned to work rather than hire additional personnel.

C. Logistical Support

Although with better management PIDAC could certainly get more mileage out of what logistical support it has, it still needs more. Indications are that the travel allowance is too small to meet essential work related needs, especially for the zonal chiefs. Without fairly complete activity notebooks it is not possible to confirm this. It is obvious, however, that the large lumpy expenditures associated with major repairs for motorbikes confront the extension agents with liquidity problems that their 15,000 F.CFA displacement allowance cannot cover. To deal with this problem we propose allowing agents to borrow money from the special credit fund to finance repairs costing over 15,000 F.CFA. These loans would then be repaid by reducing their travel allowance by one half until the loan were repaid. USAID would have to set some limit on the maximum amount borrowed in this way.

There may also be a need for more vehicles once those already available are more efficiently programmed. The team member who was to look at this question more carefully was never sucessfully recruited so USAID will have to examine this question more closely at a future date .

Shortages of office materials, fuel, furniture and other operating supplies arise in important part from the administrative procedures for ordering imposed on SOMIVAC by its legal status. The section on overall project management offers a few suggestions on how this might be changed.

D. Les Thèmes de la Vulgarisation

1. Contenu des Thèmes et leur Adoption Par les Paysans

En s'appuyant sur les résultats fournis par la rechreche agronomique, la Direction Technique des Opérations (DTO) de la SOMIVAC a mis à la disposition des Services de Vulgarisation un certain nombre de fiches techniques par spéculation. Ces fiches techniques, condensent l'essentiel des informations techniques devant être transmises aux paysans par les Services de Vulgarisation.

La Division d'Agro-Vulgarisation du PIDAC a classé les thèmes techniques en deux grands groupes: les thèmes généraux ou prioritaires et les thèmes spécifiques. Les thèmes prioritaires regroupent la traction bovine, le respect du calendrier et la fumure organique. Les thèmes spécifiques sont les techniques culturales développées pour chaque culture.

a. Traction Bovine La traction bovine est un thème assez nouveau pour le PIDAC. La diffusion de ce thème s'était heurtée à la cessation du crédit agricole pour l'achat du matériel agricole. La disponibilité du crédit spécial au PIDAC sera en faveur de cette opération. Dans les rizières de basses terres, ce thème rencontre des problèmes: les boeufs de trait (race N'Dama) ne sont pas assez solides pour travailler dans les rizières non inondées ou sur les terres affectées par le sel. La matériel agricole actuellement disponible n'est pas bien adapté pour les sols des rizières. Par contre, sur les plateaux et surtout dans les zones arachidières les paysans sont assez réceptifs à la traction bovine.

A l'heure actuelle, 16% des paysans sont équipés en charrue, 13% en charrette, 7% en semoir et 3% en houe-sine (SOMIVAC, 1983; Annex III) . Le faible pourcentage des paysans

équipés en houe-sine montre que le PIDAC ne met pas assez d'accent sur le sarclage bovin. C'est d'ailleurs un problème fréquent en Afrique. En principe, il est lié au fait que les encadreurs eux-mêmes ne connaissent pas comment sarcler avec la traction bovine. Cela implique que le PIDAC devrait lancer un programme de formation dans ce domaine. En même temps la recherche doit se pencher sérieusement sur le problème d'équipement et de matériel agricole appropriés à la riziculture aquatique.

b. Respect du Calendrier Cultural Ce thème est spécifique pour chaque culture. Ce thème rencontre également tant de problèmes au niveau du paysan, problèmes dûs au manque total de la main-d'oeuvre. Ces problèmes auront leur solution en partie avec l'introduction de la traction bovine, surtout le sarclage.

c. Fumure Organique. Pour diminuer les coûts de fertilisation, le PIDAC a demandé aux paysans d'utiliser de la fumure organique en faisant des parkages des animaux dans les parcelles. Ce thème ne rencontre aucun problème car il est de tradition. Ce qu'il reste à faire est d'y incorporer d'autres matières organiques comme les herbes en composte avec le fumier pour augmenter la totalité de fumure organique.

d. Thèmes Techniques Spécifiques. Ces thèmes sont développés par culture. L'étude d'évaluation faite par la DEEP donne quelques renseignements sur leurs incidences d'adoption par les paysans. Le Tableau IV-2 récapitule les résultats actuellement disponibles.

-- Riz Aquatique. Le labour à plat est préconisé pour la préparation du sol. Le thème est difficile à faire passer car il n'y a pas de matériel agricole approprié pour ces rizières. Les billons peuvent être aussi une façon de concentrer le sel sur le haut du billon, ce qui permet un meilleur rendement pour les pieds qui restent.

Les semences améliorées passent plus ou moins facilement. Etant donné le peu d'engrais qui étaient disponibles l'année dernière, surtout l'urée, on dirait que l'application de l'engrais passe aussi.

TABLE IV-2: Percent of Farmers Who Respect Agricultural Extension Themes by Crop and by Membership in a Producer Group, 1982

Crop/Practice	Percent of All Farmers Adopting a/		
	Member	Non-Member	All Farmers
Sample Population (N=1995)	58	42	100
Aquatic Rice			
Manure	21	55	35
NPK	6	2	4
Urea	9	3	6
Flat Plowing	15	14	15
Improved Seed	48	14	34
Transplanting	78 b/	87 b/	82
Rainfed Rice			
Manure	14	8	11
NPK	5	3	4
Urea	9	6	8
Flat Plowing	58	40	50
Improved Seed	71	37	57
Maize			
Manure	6	2	4
NPK	0.4	1	0.6
Urea	1	2	1
Flat Plowing	6	5	6
Improved Seed	56	29	45
Thinning	2	2	2
Millet/Sorghum			
Manure	3	2	3
NPK	0.3	0	0.2
Urea	0.5	0	0.3
Thinning	25	27	26
Peanuts			
Improved Seed	76	55	67
NPK	0	0	0

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a. At least one household member using at least part of the practice on at least part of his land unless otherwise stated.

b. Percent of seed, not of peasants

Source: Preliminary results of DEEP evolution study.

-- Rainfed Rice. Fertilizer appears to be used about as much on rainfed rice as on aquatic rice. Improved seed is used by more farmers in both groups, much more so than for aquatic rice. Both themes appear to be acceptable to farmers.

-- Maize. Farmers readily adopt new varieties of maize but rarely thin their maize and rarely use flat plowing. Fewer farmers apply fertilizer on their maize than on rice but then maize is usually grown on the most fertile soils anyway.

-- Millet/Sorghum. In spite of the availability of excellent varieties of sorghum and millet in the peanut basin the team was told that no improved varieties of sorghum and millet are available for distribution to farmers. About 1/4 of all farmers thin their millet and sorghum and a few use fertilizer. Manure, in general, is reserved for aquatic rice.

-- Peanuts. The PIDAC evaluation study being conducted by DEEP has so far tabulated little of the practice data for peanuts. The study does show a very high rate of use of improved peanut seed among all groups of farmers. This is no doubt related to the long history of research and extension work on peanuts in Senegal.

Some of the extension themes encounter more or less general difficulty, whatever the crop.

-- Le Labour de Fin de Cycle. Les paysans voient surtout pas sa nécessité. En ce moment il n'y a pas assez d'humidité, le sol est surtout sec et dur et, en plus, il n'y a pas de matériel lourd et adapté à ce genre de travail.

-- Le Semis en Ligne. Le déssouchage étant considéré comme difficile et perte de temps, le semis en ligne n'est pas accepté et d'ailleurs le semoir ne peut pas passer entre les souches.

-- L'Entretien des Cultures. Au niveau des cultures de plateau , le désherbage (sarclage) est difficile, prend beaucoup de temps et l'utilisation des herbicides rencontre des difficultés de moyens financiers.

En conclusion, quelques thèmes techniques rencontrent des difficultés importantes au niveau du paysan. Les causes profondes de ces difficultés proviennent de

plusieurs raisons. En première lieu aucun des encadreurs interviewés ne fait des parcelles de démonstration pour montrer l'intérêt de ces techniques aux paysans. Afin que l'action d'un Service de Vulgarisation puisse être efficace au départ, il est nécessaire que ce service puisse offrir des conseils valables aux paysans. Les parcelles de démonstration dans les champs de paysans sont un élément essentiel des travaux de vulgarisation. Ces parcelles devraient servir aussi de moyens d'expérimentation finale des résultats de la recherche pour confirmer leur utilité au point de vue du paysan.

Pour quelques agents les secteurs d'intervention sont trop vastes. Ils pourraient être plus efficaces avec un nombre des villages plus réduit. En même temps il n' y a que des motivations personnelles pour faire du bon travail. Les agents sont payés selon les critères administratifs et non performantes. En plus,la promotion interne pour les encadreurs se fait difficilement. L'absence de femmes parmi les vulgarisateurs contraste avec le rôle socio-économique important joué par les femmes de Basse Casamance dans le procès de production agricole. On se demande si cela n'a pas eu un impact sur le passage des thèmes.

Finalement, on note le manque de moyens financiers du paysan pour se procurer du matériel agricole. Le labour à plat, le semis en ligne et le respect du calendrier cultural ne sont pas respectés à cause du manque de la main-d'oeuvre. L'utilisation des semences sélectionnées se heurte à la non-disponibilité de quantités suffisantes. En même temps, beaucoup de paysans paraissent favorables à l'introduction de la traction bovine qui pourra, dans certains cas, éliminer les problèmes du manque de la main-d'oeuvre, le facteur "temps" qui constituent un obstacle pour le respect du calendrier cultural et pour l'acceptation des thèmes tels que le labour à plat et le semis en ligne. Ils sont également favorables à l'utilisation de la fumure minérale et des semences sélectionnées.

Le but du programme de crédit agricole spécial est d'aider les paysans à s'équiper en matériel agricole et à se procurer des quantités suffisantes en facteurs de production. Ce programme doit inclure l'achat de pièces de rechange et prévoir la formation des forgerons ruraux.

2. Costs and Benefits of Extension Themes

At the present time there is little good evidence on the benefits of many of the extension themes. The only data available to the team was the partially tabulated and analysized data from the DEEP evaluation study.

The DEEP study showed substantial and significant yield effects for the number of weedings, early seeding and application of manure, using two way analysis of variance on rainfed rice and maize. Peanuts showed a response to manure and, aquatic rice, to planting date. The bivariate nature of most of these analyses and the failure to report mean values for the component variables prevents a serious quantitative application of the findings. The value of the coefficients will almost certainly fall in more completely specified models. At the same time the small sample sizes actually realized across selected domains will simply not support a much more elaborate analysis than that already attempted by the DEEP evaluation team. A serious look at the benefits of selected themes requires a substantially different sampling methodology than that used. About the best that can be done to evaluate the benefits of specific extension themes is the kind of analysis done in Annex A where data on incidence of particular practices is combined with assumptions regarding their effects based on experience elsewhere, including the U.S. This would be essentially an exercise in numbers without revealing a great deal of concrete information. There are, nonetheless a few points worth noting.

a. Fertilizer Response FAO fertilizer demonstrations throughout Africa show farm level responses to nitrogen in the range of 8-12 kilos of rice per kilo of nutrient applied under normal conditions at application rates between 50-100 kg of nutrient per hectare, essentially the rates suggested by PIDAC [Zalla, Diamond, Muhindar, 1978]. Responses to potassium and phosphate are lower. Maize yields vary enormously depending on the variety but generally they have been slightly below those for rice. Sorghum is less responsive to applications of nitrogen than rice & maize, mostly because of the limited availability of improved varieties. Peanuts show some response to potassium and phosphate but the response is in the range of 5-8 kilograms per kilogram

of nutrient applied. The response to the NPK mixtures used in the Casamance would be lower.

Experience with fertilizer application around the world suggests that unless farmers get at least two dollars of increased production for each dollar of expenditure on fertilizer they are reluctant to use it. This essentially reflects the added costs of labor and risk associated with using fertilizer; labor for application, more weeding and harvesting and thrashing the increased production. As a rule of thumb we usually assume that the opportunity cost, or output forgone, by using a kilo of fertilizer is 150% of its cost - 100% for the fertilizer and 50% in the form of other crop production forgone, added risk etc. Given the current cost of fertilizer in Senegal of about four times the price of a kilo of grain on a nutrient basis 1/ we can see that if fertilizer subsidies were removed completely, farmers would probably only use it on rice and maize unless producer prices are raised considerably.

b. Early planting The DEEP data suggest that early planting increases cereal yields by somewhere around 20%. What we don't know is what farmers loose by planting early - later weeding of a competing crop, less area planted, greater risk of loss or whatever. Without this knowledge of the farming system any analysis of the benefits of early planting is almost certainly going to be biased upward.

c. Manure The marginal value of manure applications declines sharply at application rates above five tons per hectare. At application rates below five tons per hectare one ton of high quality manure increases cereal yields by around 150 kilograms [Zalla, 1982] The nutrient value of manure can be doubled by confining cattle so that bedding or other organic matter absorbs the urine and stores it for later application. A major benefit of a dry season cattle fattening operation would be the composted manure it could provide for rainy season cereals crops. The labor costs of such an operation would require careful study.

1/ A kilo of high analysis fertilizer that is 50% inert costs Senegal about 110 F.CFA. The average Cereals price is between 50 and 60 FCFA per kilo.

d. Weeding Everyone knows that yields rise substantially with more frequent weeding, especially with respect to the first one or two passages. Yet farmers continue to choose to allocate their time in other ways. Until we know more about what they are gaining by less frequent weeding we really can't make an accurate assessment of the costs and benefits of early weeding for a specific crop.

In summary, measuring the costs and benefits of extension themes is a serious piece of research in its own right. On the basis of the limited information at hand at the time of the evaluation it is not possible to address this question rigorously.

3. L'Acceptation Sociale des Thèmes Techniques

La suppression du programme du credit agricole et les difficultés d'acquisition d'équipement ont affecté l'acceptabilité des thèmes techniques vulgarisés par le PIDAC. Dans certaines localités (le Département d'Oussouye en particulier) les paysans Diola préfèrent ne pas s'endetter et compter sur leurs moyens de productions propres. Dans les zones anciennement encadrées par la MAC les paysans préfèrent l'utilisation de motoculteurs qui permet d'épargner leur temps et leur force de travail même s'ils n'ont pas de contrôle sur cet outil de production dont ils ne peuvent assurer l'entretien technique.

Même dans les zones où la culture attelée est acceptée, ce thème technique demande un investissement que seul un nombre limité de la population peut acquérir.

Par ailleurs il existe souvent des conflits de logique entre les systèmes agricoles du PIDAC et la rationnalité sociale, économique et culturelle traditionnelles. Les critéres à optimiser le revenu et les objectifs prioritaires ne sont pas nécessairement identiques.

Alors que les principaux thèmes techniques visent à accroître le rendement et la production (labour à plat, semences améliorées, repiquage à plusieurs brins, utilisation de la faucille pour la récolte, etc...), les paysans évaluent la rentabilité de ces thèmes en fonction de leur moyen et des avantages comme les incidences sur l'enherbement, l'augmentation du temps de travail pour certaines opérations telles que le sarclage ou le binage, exigences en engrais, importance sur l'équilibre de la division sexuelle du travail et des rythmes de travail, conséquence sur les représentations et les valeurs culturelles.

E. Acceptation des Encadreurs du PIDAC par les Villageois

Les agents de vulgarisation sont bien intégrés aux populations de leurs secteurs d'activités. Certains parmi eux, originaires de ces zones, font preuve de dynamisme dans leur volonté de résoudre les problèmes que rencontrent les paysans.

Cependant le model actuel de recrutement des encadreurs (par affectation de fonctionnaire de la D.G.P.A.) risque d'entrainer des problèmes d'insertion socio-culturelle. Certains d'entre eux mettent quelque temps à connaître la langue et la culture des populations de leurs secteurs.

Par ailleurs, l'acceptation des vulgarisateurs est souvent très liée à la confiance que les populations placent dans les qualités individuelles de chacun d'eux. Les relations de confiance peuvent être affectées si, comme cela s'est effectué dans certaines zones, le PIDAC ne respecte pas certains engagements pris (réparation de motoculteurs, dotation de matériaux de construction pour des digues ou des magasins etc..).

F. Recommendations

1. Mettre sur pied par la Division vulgarisation du PIDAC un programme d'expérimentation sur le terrain, en collaboration avec l'ISRA, afin de vérifier les recommandations de celle-ci avant leur diffusion. Il conviendrait aussi dans ce cadre de prêter une attention aux incidences écologiques et sociologiques de l'application des thèmes techniques.

2. Donner des instructions fermes aux chefs de zone et encadreurs, de faire des parcelles de démonstration dans les champs de paysans. Cela permettra à l'encadrement d'avoir un impact immédiat qui donnera confiance aux paysans et rassurera les encadreurs. En même temps, il permettra une meilleure évaluation du niveau technique de l'encadreur.

3. Expérimenter l'impact d'éventuelles valgarisatrices rurales en recrutant des femmes pour la vulgarisation et en effectuant au moins une vulgarisatrice à chaque zone.

4. Etablir un système d'évaluation par les villageois du système de vulgarisation du PIDAC. Aussi prévoir dans la formation et le contrôle des connaissances une place importante à la connaissance du milieu traditionnel dans lequel interviennent les agents.

V. TRAINING

A. Extension Training and Teaching Methods

1. Méthodes et Moyens Pédagogiques

Le parti pris pédagogique appliqué au PIDAC est celui de la "formation en cascade": des cadres, peu nombreux mais de haut niveau, doivent former les agents locaux de vulgarisation qui, à leur tour, encadrent et forment les paysans. Des possibilités régulières de perfectionnement des agents de vulgarisation à tous les niveaux devaient compléter ce système.
Les objectifs de la méthode de formation en cascade pourraient se définir comme suit:

- permettre une démultiplication massive et rapide de l'action de formation par une progression géométrique,
- rapprocher le formateur du formé sur le plan du langage et du niveau compréhension, les chances d'une bonne transmission étant meilleures entre personnes proches au point de vue hiérarchique, social, culturel.
- obtenir des progressions rapides et les meilleurs taux d'adoption des thèmes techniques et d'utilisation des facteurs de production, grâce à cette formation-encadrement rapprochée et aussi, à l'utilisation à chaque niveau des moyens, supports et techniques pédagogiques les plus appropriés.

2. Application au PIDAC

Après une première étape basée sur un système de formation et de suivi individuels, la SOMIVAC/PIDAC a adopté la méthode de formation en cascade de l'encadrement. A partir des thèmes techniques les services centraux mettent au point les programmes à diffuser. Avec l'aide pédagogique des unités de formation, ils forment les responsables départementaux et les chefs de zone qui doivent "répéter" les programmes au niveau des agents vulgarisateurs de base. Ceux-ci les "adaptent", suivant le cas et les besoins locaux, au niveau des paysans. Pour la bonne formation de ceux-ci, le système devait se concrétiser, théoriquement, par des visites organisées sur des blocs de démonstration. Ensuite, sous la supervision des agents du PIDAC, les "paysans-démonstrateurs" sensibiliseraient les autres aux résultats obtenus. Donc, ce complément indispensable de la formation en cascade se base sur une approche de masse, avec des "exploitations d'appui" et des "blocs de culture" comme écoles de formation.

Dernierement, devant les faiblesses et difficultes de la methode decrite,

surtout dans la partie "démonstration sur le terrain", le Bureau de Formation de la SOMIVAC a proposé l'expérimentation d'un système amélioré de vulgarisation-formation plus "direct". Celui-ci se situe aussi au niveau des blocs de culture identifiés comme le centre d'intérêt le plus net chez le paysan. Après identification de quelques villages-tests, un calendrier de travail sera établi, en y associant l'encadrement de zone dans une expérimentation menée par la DTO et le Bureau de Formation de la SOMIVAC. A travers un appui plus rapproché des principales activités des paysans, le but recherché est une plus grande responsabilisation des paysans dans la conduite de leurs affaires, en améliorant les performances des groupements de producteurs.
Bien entendu, un programme de suivi et une évaluation du test sont prévus.

3. Problèmes et Difficultés

Les problèmes posés par l'application de la méthode décrite et les difficultés rencontrées dans son fonctionnement sont connus, ayant été largement discutés, analysés, mis en évidence.
Citons, par exemple :

- les tâches administratives de plus en plus contraignantes qui sont confiées aux encadreurs, au détriment du travail de conseiller-formateur du paysan.
- le manque de plus en plus sensible de moyens d'intervention rapides et efficaces
- méthode de vulgarisation insuffisamment définie et suivie
- pédagogie orale, sans supports ni moyens didactiques
- indisponibilité des facteurs de production
- rupture de continuité entre recherche et vulgarisation d'une part, entre vulgarisation et formation d'autre part
- risques de déperdition du message à travers les divers échelons de la "cascade" de formation, qui sont maintenant trop nombreux
- insuffisance du suivi et de l'évaluation des vulgarisateurs
- problèmes de qualification et de motivation au travail
- manque de mesure des besoins réels des paysans, de l'acceptation et de l'adoption profondes des thèmes proposés.

4. Conclusion

Les méthodes pédagogiques utilisées par les agents de vulgarisation sont théoriquement valables et reposent sur des idées éprouvées et des postulats sains.

Comme nous l'avons vu, les difficultés surgissent au niveau de leur application : trop de théories, pas assez de pratique ; trop de paroles, pas assez d'actes ; trop d'inertie institutionnelle, pas assez de dynamisme opérationnel ; trop de thèmes techniques bien faits, pas assez de préparation pédagogique de la transmission.

Il faut se garder, dans le domaine des méthodes pédagogiques, de tout dogmatisme : la formation en cascade est valable si on arrive à limiter, par les techniques pédagogiques et les moyens didactiques, la déperdition du message et les étapes intermédiaires. Mais ce n'est pas le seul système valable : nous avons vu qu'il fallait le compléter par des visites organisées et, pourquoi pas, par des interventions d'appui direct des spécialistes de tel ou tel domaine.

L'essentiel, dans la transmission du message, est de ne pas se limiter à la pédagogie orale, du verbe, mais d'appliquer une pédagogie de l'action, du réel. Celle-ci suppose :

- une préparation minutieuse et rigoureuse, comportant :
  - l'étude des besoins du milieu visé
  - la détermination des niveaux de départ et d'arrivée
  - la fixation des objectifs à atteindre
  - la transformation des objectifs techniques en objectifs pédagogiques
  - la programmation des progressions
  - la confection des documents (guide de l'animateur, fiches) et des supports pédagogiques
  - la mise en place de tous les moyens nécessaires
- une diffusion "soignée" faisant appel :
  - aux techniques participatives de la pédagogie active des adultes
  - aux moyens audio-visuels les plus adaptés
  - à la formation pédagogique de tous les "diffuseurs"
  - à la démonstration, aux applications pratiques, à l'observation de la réalité, plus qu'à la théorie

- un contrôle continu, comprenant:
  - L'évaluation en cours et en fin d'action
  - La mesure de l'acquis et de son utilisation
  - La prise en compte permanent du "feed-back" pour une amélioration constante des performances.

Il ne faut pas que les difficultés du soutien logistique, très souvent réelles, servent de prétexte au ralentissement des actions, si la volonté de réussir et la motivation de servir le monde rural existent.

B. Literacy Training

1. Les Réalisations du Projet

Le document de projet prévoyait pour le volet alphabétisation, en 5 ans: 36 "enseignants" formés, touchant 3,000 paysans, aptes à lire et à comprendre des documents techniques de base en langues vernaculaires.

En Janvier 1982, six centres d'alphabétisation ont été ouverts avec les six agents formés ayant comme objectif d'alphabétiser 60 auditeurs par centre: 30 hommes et 30 femmes. En avril 1982, les six centres fonctionnaient avec un éffectif de 428 villageois inscrits (169 hommes et 259 femmes). En janvier de cette année six nouveaux centres sont ouverts, répartis parmi les six mêmes alphabétiseurs avec 724 inscrits au total. La longue préparation et les retards cumulés avant le démarrage réel de l'alphabétisation fonctionnelle expliquent les différences entre les effectifs prévus et les effectifs actuels.

Il est prévu, en 1984, l'ouverture de 18 nouveaux centres d'alphabétisation avec le recrutement, dans le milieu rural, de 10 animatrices et 8 animateurs. Ainsi, en 1985, 2400 personnes pourraient être touchées par l'action.

Lors de nos visites dans les centres, il nous a été donné de constater un autre écart, entre les effectifs officiels et les auditeurs (en fait, presque exclusivement des femmes) réellement presents. Le taux de fréquentation semble donc assez faible (10 auditrices sur les 52 inscrites à Diakène Diola, par exemple, et 12 sur 27 à Suel le jour de la visite) même si les raisons avancées peuvent se justifier: cérémonies familiales, décès, autres travaux et charges

de famille, outre les problèmes logistiques qui viennent souvent entraver le bon déroulement des cours: locaux, matériels, fournitures, documents. Pourtant, la motivation semble exister, surtout chez les femmes, et l'intérêt assez soutenu.

Lié à l'alphabétisation, un programme de formation à l'utilisation de documents comptables simples a touché, lors d'une session de formation en décembre 1982, 96 présidents et secrétaires de Groupements de Producteurs représentant 48 G.P. Cette action n'a pas connu de suite à ce jour (sauf un à Kabiline) par manque, parait-il, de locaux, de matériels et de fournitures qui n'ont pas pu être achetés par le PIDAC.

2. Méthodes et Moyens Pedagogiques

La méthode d'alphabétisation fonctionnelle appliquée par le PIDAC est inspirée de celle mise au point par l'UNESCO, basée sur un système de langage phoétique, enseigne les éléments de transcription de base et les sons (sur des informations de technique et de vie agricoles ici) avec des résultats probants à court terme et renforcée par un programme permanent de brochures techniques (phase de post-alphabétisation en langues locales). D'Après les études et des reunions organisées pour élaborer le programme à appliquer en Basse Camamance on peut déduire que la preparation théorique de cette action a été satisfaisante, l'approche méthodologique suffisamment approfondie, les idées clarifiées et les moyens bien circonscrits.

Pendant cette deuxième année à peine de fonctionnement, il est difficile de mesurer l'impact réel de cette action de SOMIVAC/PIDAC sur la population-cible. Après les lenteurs du démarrage, on peut tout juste remarquer une certaine lenteur dans la progression des auditeurs, à en juger d'après le nombre restreint de pages remplies dans les cahiers distribués depuis plus d'un an. La même lenteur peut être constatée dans la transcription des thèmes techniques, ainsi qu'un certain retard dans la publication des documents prévus comme supports de la formation: glossaires, documents comptables, arithmétique élémentaire, problèmes agricoles.

Sur le plan pédagogique, ces retards se traduisent par une trop grande autonomie des alphabétiseurs, qui, privés de ces supports, aboutissent à trop de disparités dans la progression et dans l'impact de l'action, suivant la formation (qui mériterait d'être renforcée), la bonne volonté, les capacités individuelles de chacun. Le danger de dérive vers une alphabétisation de type scolaire existe aussi dans ce cas.

A ce rythme-là, il faudra encore de très nombreuses années d'action centrale avant d'arriver au but poursuivi: la prise en charge par les villageois eux-mêmes de toutes les actions de développement. L'action inachevée en direction des secrétaires de G.P. est significative à ce titre et on peut se demander, même en cas de reprise, si ceux-ci restent suffisamment motivés pour s'intéresser au suivi de l'action abandonnée.

On peut aussi se demander si l'approche adoptée fait suffisamment de place aux indispensables liaisons entre l'alphabétisation fonctionnelle et les autres services au niveau des villages: vulgarisation agricole, volet féminin, santé, de manière à arriver à un véritable développement intégré, plutôt qu'à une juxtaposition d'actions disparates.

3. Acceptation des Alphabétiseurs par la Population

Les agents chargés de l'alphabétisation sont socialement bien acceptés par les populations auprès desquelles ils effectuent leurs activités. En général, les villageois sont très favorables au projet. Les désistements qui se font sentir aprés l'ouventure d'un centre d'alphabétisation, semblent être liés à la difficulté d'insérer les activités d'alphabétisation dans l'organisation villageoise du temps plutôt qu' a leur rapport avec l'agent. Des femmes de certaines localités évoquent souvent leur occupation par le maraîchage et les voyages pour la vente de leurs produits. Le calendrier d'alphabétisation se déroule pendant la saison sèche qui est la période des migrations des hommes adultes pour la récolte de vin de palme ou la quête d'autres revenues monétaires. Quelques fois aussi la polarisation vers des activités socioculturelles traditionnelles (circoncisions, cérémonies...) entre en compétition avec le calendrier d'alphabétisation.

4. Conclusion

Il ne fait pas de doute que l'alphabétisation fonctionnelle contribue essentiellement aux objectifs du projet. Les méthodes pédagogiques prévues, les objectifs à atteindre, nous semblent valables. Il reste à choisir une stratégie de réalisation claire et à mettre en place les moyens propres à en accélérer le rythme.

Parmi les stratégies proposées, une démarche de "démultiplication intégrante" nous semble la plus proche de l'esprit du projet. A l'instar de ce qui a été commencé en direction des secrétaires de G.P., il s'agirait de former le maximum d'alphabétiseurs-paysans, avec un programme intégrant à la pédagogie de l'alphabétisation fonctionnelle, suivant le cas, des thèmes touchant l'ensemble des problèmes de développement technique, social et culturel du monde rural. Un perfectionnement des agents actuels d'alphabétisation dans ces thèmes (la plupart étant déjà des ATA) et des agents encadreurs de la vulgarisation agricole dans le domaine de la méthodologie de l'alphabétisation, pourrait d'une

part, resserrer les liens indispensables entre ces activités complémentaires et, d'autre part, préluder à une action massive de démultiplication en "cascade". Tous ces encadreurs pourraient former, puis suivre et appuyer les alphabétiseurs-diffuseurs villageois, qui entraîneraient à leur tour les membres des G.P., mais aussi des autres groupements tradionnels existants. A ce but il serait souhaitable de regrouper, partout ou cela est possible, tout l'encadrement de base,y compris les monitrices du volet féminin, dans une équipe polyvalente sous la coordination du chef de zone. Tous ces agents devraient bénéficier d'une formation complémentaire dans les domaines spécifiques des autres membres de l'équipe. Cela créera une unité d'action entre les differents facteurs de developpement intégré dans chaque zone--alphabétisation, production, santé, femmes, credit--qui pourra reduire la duplication et le double emploi des cadres tout en assurant une integration beaucoup plus rationelle des activités du projet au niveau des paysans.

L'application d'une telle stratégie implique, bien sûr, non seulement la mise en place des structures adéquates et d'une volonté de réussir, mais encore l'accélération du soutien logistique et l'augmentation des ressources du projet dans ce domaine. Certains de ces moyens, prévus déjà dans le financement original du projet, ont été mis en place, d'autres non, quelques-uns ayant été utilisés à d'autres fins. Il ne fait pas de doute que l'alphabétisation fonctionnelle ne pourra pas connaître l'impact espére si l'encadrement ne dispose pas de moyens d'animation, de contrôle, de suivi sur place, si l'argent manque pour multiplier et diffuser les documents et supports pédagogiques prévus, si les difficultés matérielles découragent les alphabétiseurs et démotivent les villageois.

It est donc, necessaire d'intensifier la pédagogie de l'action, par une plus grande attention accordée aux observations, démonstrations et applications sur le terraine, et par la confection et la diffusion des supports pédagogiques indispensables à l'efficacité de toutes les actions de formation. Il faudra former un ou deux spécialistes des aides audio-visuelles et débloquer les crédits nécessaires à l'exécution de ces moyens (syllabaires, manuels, tableaux, planches, fiches, machines et matériels de démonstration...) sans lesquels le message pédagogique est à moitié perdu. En même temps, il faut pas oublier la préparation des actions de post-alphabétisation par des contacts avec tous les intéressés et la mise en place des moyens de diffusion les plus larges (radio, journal, brochures techniques, aide-mémoire, correspondance, etc) en langues locales.

La mise en forme pédagogique du contenu technique et la diffusion du message par des méthodes appropriées sont indispensables pour assurer l'impact des thèmes techniques sur le monde rural dans une démarche pluridisciplinaire. Il serai souhaitable donc, sur le plan de la formation, de regrouper structurellement les unités chargées de la fonction "formation," avec le concours du Bureau de Formation de la SOMIVAC, au sein d'une Division Formation du projet PIDAC et la doter de moyens (humains, matériels, de communication et de perfectionnement interne et externe des formateurs) la rendant capable de faire la synthèse des différentes approches et d'intégrer tous les éléments d'information-formation, concernant non seulement le domaine technique, mais aussi les autres services aux villageois: promotion féminine, volet santé et action sociale, volet alphabétisation qui en constitueraient les sections spécialisées.

C. In Service Training

1. SOMIVAC - Division of Training

Les activités de recyclage et de perfectionnement internes des agents de la SOMIVAC/PIDAC sous l'égide du Bureau de la Formation ont été organisées et programmées surtout à partir des années 1980-81. Il comporte quatre grandes catégories, concernant:

-- la formation des formateurs
-- la formation des paysans
-- la formation des cadres
-- d'autres actions formatives.

Les actions de formation les plus directes, dirigées vers les encadreurs et les paysans, ont lieu naturellement pendant la saison sèche, à activités agricoles plus réduites.

Pour les années précedéntes, des programmations identiques des activités de recyclage et de formation-perfectionnement ont été établies. Les taux de réalisation sont très variables et oscillent entre 0 et 100%. Nous notons pour les activités jugées les plus importantes, que:

-- les réunions de coordination - que nous estimons très utiles - sont passées de mensuelles à trimestrielles, avec une tendance actuelle de revenir à la première périodicité;
-- Le perfectionnement des chefs et intendants de zone, prévu pour 3 fois 5 jours par an pendant la saison sèche, n'a eu lieu qu'une fois pour l'année 1982-83;

-- la formation et le suivi des encadreurs de base, qui devaient prendre une dizaine de jours chacun par an, ont été réalisés à peu près à 50%, les deux dernières années.

Les problèmes et difficultés rencontrés dans l'organisation des stages internes de recyclage et de perfectionnement sont communs à l'ensemble des activités de formation: le besoin d'improviser au dernier moment, le manque des moyens nécessaires, l'absence des agents prévus (qui ont toujours plus important et plus urgent à faire), donc des difficultés d'organisation, de suivi et d'évaluation des résultats.

L'impact réel de la formation ne peut être considéré que sur une plus longue période, mais la démarche pour assurer le maximum de succès aux actions est connue.

2. Counterpart Training

Actuellement, 12 experts techniciens sont présents au titre du projet, répartis entre la SOMIVAC (5), le PIDAC (4) et l'ISRA (3 dont un en voie de transfert au PIDAC). Ces experts ont travaillé ou travaillent encore avec au moins un, parfois plusieurs homologues désignés, successivement ou simultanément, dont la formation est inscrite dans les termes de référence du contrat, à l'exception de Mademoiselle J. TIMBERLAKE du PIDAC et de Monsieur C. JOLLY de l'ISRA. Malgre cela, aucune méthodologie ne semble avoir été prévue au début pour cette formation ni de contraintes d'organisation, de programmation et d'évaluation. Cette activité essentielle à la relève du projet par les nationaux a été laissée à l'initiative individuelle, à la bonne volonté et au temps disponible de chaque assistant technique. Ainsi, cette formation se passe essentiellement "sur le tas", par l'exemple, les conseils, l'assistance, l'expérience de tous les jours.

Dans ces conditions et en l'état actuel des choses, il est très difficile, sinon impossible, d'évaluer le travail de formation des homologues par les experts de l'assistance technique. On peut s'en faire une idée, en lisant les rapports d'activité des experts, mais cette vue ne peut pas être absolument objective. La même impression de bonne volonté un peu vague se dégage des entretiens avec des experts et des homologues.

Le manque de coordination dans l'organisation de cet aspect du fonctionnement du projet s'est ressenti aussi dans l'attribution des bourses d'études aux homologues, entraînant souvent une présence non simultanée de ceux-ci avec l'expert qui devait les former dans leurs fonctions à la SOMIVAC/PIDAC. Une

autre conséquence de cette situation a été le besoin de renouveler le contrat initialement prévu pour certains experts de l'assistance technique.

Ce n'est qu'assez récemment que le Directeur General de la SOMIVAC a demandé aux experts de l'assistance technique de faire le point sur la formation des homologues, en lui envoyant le programme de formation conjointement arrêté entre l'assistant technique et son homologue. Cette orientation ne semble pas avoir été suivie d'effet jusqu'à ce jour. Or, il ne fait pas de doute que la formation des homologues est l'une des principales raisons d'être de l'assistance technique.

Il ne s'agit pas là, bien sûr, d'une formation de base proprement dite, mais d'un perfectionnement professionnel, consistant en un complément théorique sur les points faibles et surtout en une maîtrise du poste de travail. Il s'agit aussi d'une méthodologie de résolution des problèmes qui se posent, un savoir-faire pratique, ainsi qu'un vouloir-faire, que l'expérience des "anciens" peut apporter. A ce point de vue, on peut affirmer que les jeunes cadres de la SOMIVAC/PIDAC ont recu, en général, une formation et des perfectionnements de bon niveau, même si quelques lacunes subsistent, dans tel ou tel domaine. Mais ils sont généralement jeunes et possedènt les qualités et les défauts de la jeunesse: enthousiasme, impatience, esprit critique, mais aussi découragement devant les difficultés, manque d'initiative et de recherche d'optimisation des résultats avec les moyens disponibles. Dans ces conditions, comme nous l'avons vu, s'ils ne sont pas suffisamment encadrés, si leurs activités et leur perfectionnement ne sont pas assez programmés, suivis, évalués en fonction d'objectifs mesurables fixés, le progrès et la prise en compte des responsabilités se font forcément attendre.

D. External Training

Pensant à la nécessité d'un personnel technique bien formé et d'une structure d'encadrement efficace, le document de projet a prévu un certain nombre de bourses d'études, principalement aux Etats-Unis, non seulement pour le PIDAC, mais aussi pour la SOMIVAC et l'ISRA. Contrairement aux autres du projet, cette activité a démarré assez rapidement, huit boursiers long-terme ont pu quitter le Sénégal dès le mois de juillet 1978. Sur ce nombre, six boursiers sont déjà rentrés, même si on ne peut pas les retrouver tous, soit dans la spécialité indiquée au départ, ou nantis des diplômes escomptés.

Dix autres, partis en 1980 et 1981, poursuivent leurs études aux Etats-Unis et doivent revenir entre fin 1983 et fin 1985. En ce qui concerne la formation à court terme, on constate une plus grande diversification dans la destination des boursiers pour des études de courts durée, puisqu'on y trouve, en dehors des Etas-Unis, des stages en France, dans d'autres pays d'Afrique et même à Dakar.

Certains problèmes ont été signales dans l'attribution judicieuse et l'utilisation optimale des bourses accordées, surtout dans les premiers temps du projet. Des difficultés ont surgi dans la sélection et le suivi des étudiants et dans leur réintégration à la SOMIVAC, qui ne semblent pas avoir toujours respecté des critères objectifs et préétablis. Ainsi, par exemple, un agent a été remis à la disposition de la DGPA dès son retour d'études; un autre est revenu sans avoir obtenu le diplôme, objet de sa formation.

Le suivi des étudiants par le Département d'Agriculture américain n'a pas toujours été rigoureux ni systématique. Certains boursiers ont pu changer le domaine de spécialisation prévu, sans l'avis de la SOMIVAC.

A partir de 1981, un certain effort a été fait, sous l'égide du Bureau de Formation SOMIVAC, pour rationaliser les démarches et procédés de choix des candidats à une bourse d'études, pour améliorer le contact avec les étudiants à l'étranger et pour mieux préparer leur retour. Toutes ces initiatives, dans la mesure où elles ont été correctement appliquées et respectées, ont pu apporter une certaine amélioration, principalement dans les critères de choix et le suivi des étudiants. Cependant, il semblerait que leur application n'a pas toujours été aussi large et systématique que l'on aurait souhaité au niveau de la Direction Générale. Par ailleurs, il subsiste un certain nombre de problèmes, concernant principalement la réinsertion des étudiants dans les structures de SOMIVAC/PIDAC, la valorisation réelle de la formation acquise, le statut et la fixation de ces agents.

Les stages de formation de courte durée ont moins connu ce genre de problèmes, les thèmes d'études determinés à l'avance ayant été mieux définis et circonscrits, en fonction de l'objectif poursuivi. Le seul problème signalé a trait à la connaissance linguistique de certains candidats, principalement dans les pays anglophones.

E. Adéquation de la Formation Reçue Avec l'Emploi Occupé Par L'Agent

L'adéquation d'un agent au poste de travail doit être considérée a deux moments différents:

- dans le présent, et la constatation d'un écart "négatif" donnera lieu à une action de formation, de perfectionnement ou d'information;
- dans l'avenir, avec un objectif fixé dans le temps, de manière à amener l'agent a être apte à occuper le poste, tel qu'il sera dans quelques années.

Cette adéquation permanente fait appel aux méthodes et techniques de la gestion prévisionnelle (des postes, des hommes) et doit déboucher sur les plans de l'entreprise, programmant dans le temps, les actions de recrutement, de formation, de perfectionnement, de remplacement et d'évolution de carrièr des agents. Elle nécessite donc des études approfondies des postes de travail et de leur évolution, des hommes de l'entreprise (globalement et individuellement) et de leur évolution (sur les plans quantitatif et qualitatif), des comportements professionnels nécessaires (savoir - savoir-faire - attitudes) dans le présent et dans l'avenir, de manière a degager les programmes les plus adaptés de formation, perfectionnement ou information.

Ce travail minutieux et de longue haleine n'a pas encore été fait à la SOMIVAC. Par conséquent, l'effort d'adéquation formation-emploi est surtout intuitif pour le moment. On est passé progressivement d'une conception de formation-cadeau a une considération des besoins généraux de l'entreprise, puis à une étude plus précise des besoins des différentes unités, mais sans pousser, jusqu'a présent, à l'approfondissement de ces besoins, par fonctions et postes de travail.

Il ne fait pas de doute que la taille que va atteindre la SOMIVAC, avec tous les projets qu'elle doit encadrer, rendra nécessaires les études indiquées, pour que la formation de ses agents de tous les niveaux "colle" beaucoup plus aux besoins de l'emploi et aux exigences des postes de travail. Un tel équilibre ne pourra être obtenu que par la définition d'une politique de gestion du personnel claire et par un travail normatif de codification des postes. Cele permettra de mettre chaque agent au niveau de responsabilité correspondant à la fois à la formation acquise, à sa valorisation en fonction des besoins de l'entreprise et des performances démontrées. Outre une structure bien définie et un statut clair, cette politique devrait assurer la pérennité des agents dans l'enreprise, grâce a l'établissement de filières de carrière promotionnelles et à l'assainissement d'un climat social quelque peu tendu.

F. Recommendations sur la Formation

1. Regrouper les sections de formation, d'alphabétisation, volet féminin dans une seule division de formation à niveau structurel d'égalité avec les autres divisions due PIDAC, et doter cette division d'une cellule audio-visuelle fonctionnelle.

2. Regrouper tout l'encadrement de base, y compris les monitrices du volet féminin, dans une equipe polyvalente sous la coordination du chef de zone et programmer pour tous ces agents une formation complémentaire dans les domaines specifiques des autres membres de l'equipe.

3. Reprendre la formation des secretaires des Groupements de Producteurs, en leur apportant le perfectionnement et les moyens logistiques nécessaires et en pensant, dès maintenant à la passation progressive du relais de l'alphabétisation de base à des villageois.

4. Veiller à l'adéquation de la formation reçue avec le poste d'affectation de l'agent et étendre le souci de programmation, d'adéquation aux exigences de l'emploi de suivi et d'évaluation périodique à la formation des homologues et des stagiaires en fixant à cheque homologue des objectifs mesurables à réaliser.

VI. PRODUCTION DES SEMENCES AU PIDAC

A l'heure actuelle, une préoccupation majeure du PIDAC est de pouvoir mettre à la disposition des paysans des semences de bonne qualité et en quantité suffisante pour chaque campagne agricole. La production des semences est une des activités principales de la Division d'Agro-Vulgarisation du PIDAC. Sa Section Production des Semences est responsable de la multiplication des semences de riz et de maïs fournies par l'ISRA. Les semences pour l'arachide viennent de la SONAR.

Le programme de production des semences du PIDAC comporte trois opérations différentes:

A. La Ferme Semencière

Le projet devait créer une ferme de multiplication de semences de 50 ha dans sa zone d'intervention et y produire 100 tonnes de semences qui couvriront 25% des besoins des paysans. La dernière évaluation a constaté le retard dans ce volet du projet et a recommandé une démarche plus rapide.

A l'heure actuelle, cette ferme n'est effectivement pas créée. La structure existante peut être appelée le casier de multiplication, située à Koudioubé près de Diouloulou dans le Département de Bignona.

Tous les équipements nécessaires pour la ferme semencière ont été achetés aux USA et ils sont utilisés maintenant à Koudioubé. Les équipements du laboratoire des semences ont été également reçus. Le laboratoire est déjà dans la phase opérationnelle. Mais Koudioubé est toujours considéré comme un site

provisoire. Pendant les deux dernières années le PIDAC a pu réaliser à peu près 20 hectares de riz pluvial et de maïs aves les résultats assez médiocre (voir Tableau VI-1)

TABLEAU VI-1: Superficie, Rendements et Production des Semences par la Ferme Semencière et par les Paysans Contractuels du PIDAC, 1981/82.

Source/Produit	Superficies Réalisées (ha)		Rendement (ha) (tonnes)		Production (tonnes)	
	1981	1982	1981	1982	1981	1982
Ferme Semencière						
Riz	15,0	12,5	1,70	1,16	26,0	14,5
Maïs	4,5	10,0	1,40	0,78	6,0	7,8
Paysans Contractuels						
Riz	100,5	57,0	1,70	1,33	186,0	76,0
Maïs	86,0	0	1,23	0	106,0	0
Niébé	0	13,9	0	1,86	0	24,2
Soja	0	1,0	0	0,80		0,8
TOTAL	206,0	93,5	-	-	324,0	123,3

Source: Rapport de la Section Production Semence, 1982.

B. Les Paysans Contractuels

Le PIDAC collabore avec les paysans contractuels pour couvrir le reste de ses besoins en semences. Le PIDAC s'engage à fournir à ces paysans des semences, engrais, pesticides et l'assistance technique nécessaire. Le projet donne à crédit les engrais et semences aux paysans multiplicateurs qui les remboursent à la récolte. Les herbicides leur sont données gratuitement et les insecticides seulement en cas d'attaque. Les paysans s'engagent à vendre au PIDAC après la récolte, 50% de leur production.

En principe la production des semences se fait en bloc. Actuellement il y a 604 paysans contractuels dans 32 villages. Au niveau des paysans contractuels, la production globale de semences pour toute culture confondue passe de 292 tonnes en 1981 à 101 tonnes en 1982 (voir Tableau VI-1).

C. Le Traitement des Semances

Le PIDAC traite les semences, les stocke dans des magasins du PIDAC, puis analyse leur qualité (pûreté variétale, taux de germination) avant de les distribuer l'année suivante. Les opérations de traitement de semences se déroulent généralement entre le 15 novembre et le 30 avril au Centre de Guérina. Pour 1982/83, 75 tonnes de semences de riz et de maïs ont été traitées et stockées. Environ 12. tonnes de semences de riz et de maïs ont été rejetées à cause de la faiblesse du taux de germination (63 à 73%), soit 16% du total stocké.

D. Analyse des Problèmes

La section production des semences se heurte à de multiples problèmes. Le PIDAC est toujours à la recherche d'un site approprié pour l'implantation de sa ferme semencière. La section Production de Semences souffre du manque de personnel: en plus du chef de la section (expert), il y a un agronome, deux ATA, un ETA, quatre conducteurs, et deux mécaniciens. La section rencontre également des problèmes au niveau des paysans contractuels soumis aux conditions climatiques aléatoires conduisant à une baisse de rendement et de la qualité des semences. La production globale des semences est très faible et ne peut pas, à l'heure actuelle, satisfaire les besoins des paysans.

Un autre problème que la section Production de Semences rencontre est que les semences d'élite que l'ISRA fournies au PIDAC sont parfois de très mauvaise qualité.

E. Recommandations

Nos recommandations dans ce domaine sont effectivement les mêmes que celles de la dernière Mission d'Evaluation:

. Accélérer l'établissement de la ferme de production de semences du PIDAC. The seed farm should be placed under the direction of a qualified Senegalese with supervision and support provided by the plant protection technical assistant.

. Renforcer le système de production de semences au niveau des paysans contractuels et des Groupement de Producteurs avec un encadrement technique de haut niveau.

VII. PROTECTION DES VEGETAUX

L'objectif de la section protection des végétaux est de former les agents du PIDAC et les paysans pour qu'ils soient capables de protéger les cultures.

A. Programme de la Protection des Végétaux

Les activités principales sont concentrées sur les points suivants:

- Identifer les maladies, les insectes, et les mauvaises herbes nuisibles aux principales cultures en Basse Casamance.
- Enseigner aux agents de vulgarisation du PIDAC les méthodes d'identification et les moyens de lutte.
- Aider la Section Formation de la Division Agro-Vulgarisation à élaborer un programme de formation pour les vulgarisateurs et les paysans.
- Elaborer et rendre efficace un programme de protection des végétaux dans le projet PIDAC.

B. Réalisations de la Section de Protection des Végétaux

Dans un premier temps, la section des PV s'est consacrée à la collection des documents relatifs à l'identification et aux moyens de lutte contre les maladies, les insectes et les adventices de diverses cultures. En collaboration avec les laboratoires de phytopathologie et d'entomologie de l'ISRA/Djibélor, la section a collectionné et identifié des échantillons d'insectes et de plantes malades. Elle a mis à la disposition de chaque département et zone une collection très utile pour leur identification.

Des inspections périodiques, compte tenu du manque de carburant, ont été faites conjointement avec l'ISRA sur les périmètres maraîchers et les grandes cultures (riz, maïs) pour identifier les problèmes spécifiques à chaque culture. Des progrès notables ont été enregistrés sur le riz et le maïs. Puis avec la participation des chefs de zones, des adventices ont été identifiés dans chaque zone. Ceci a permis de déterminer dans chaque zone la prédominance d'un certain nombre d'adventices et de recommander des herbicides appropriés.

Dans le cadre de la formation des chefs de zones et vulgarisateurs, la section a participé à toutes les sessions de formation des chefs et intendants de zones organisées à Guérina et à la formation des encadreurs au niveau des quatorze zones. Ces sessions de formation ont été axées sur des fiches techniques et des cours théoriques suivis de discussion. A la suite on a présenté des maladies ou insectes étudiés et fait des visites des blocs maraîchers les plus proches du lieu de la formation.

Des sessions de formation directe ont eu lieu au niveau des paysans sur les blocs maraîchers en présence des femmes et des hommes. Ces sessions sont organisées conjointement avec la cellule d'alphabétisation.

La formation d'un homologue Sénégalais se poursuit normalement. Pour mieux asseoir ses connaissances en protection des végétaux, il a suivi un stage sur la lutte intégrée du riz à l'ADRAO (Libéria). Il a également participé, à Dakar, au séminaire sur la protection des stocks céréaliers. Aussi, il participe au programme conjoint de recherche appliquée avec l'ISRA, à l'évaluation de l'incidence des maladies et d'insectes sur les semences. Les deux homologues (expatrié et Sénégalais) collaborent très étroitement.

Malgré de nombreuses difficultés financières et techniques (manque de papier, encre, stencils, secrétaire), un certain nombre de fiches techniques ont été publiées au début de chaque campagne agricole. En collaboration avec l'ISRA, la section a pu réalisé des blocs de démonstration dans sept villages. Elle poursuit aussi un programme de recherche appliquée sollicité par l'IITA (Ibadan). Ce programme comporte la lutte contre les adventices sur le niébé et le maïs, la lutte biologique des cochenilles du manioc, et la résistance de la patate douce aux charençons.

C. Problèmes et Difficultés

En plus des difficultés déjà évoquées dans le chapitre sur la vulgarisation, la section de PV est confrontée à des problèmes de réglementation de certains produits. Tous les pesticides utilisés par le PIDAC doivent être approuvés par l'offre de la Protection de l'Environnement (E.P.A) à Washington. Par exemple, l'utilisation d'un certain nombre de produit phytosanitaires est interdite, de même que leur achat sur les fonds de l'USAID. Cependant l'utilisation de ces mêmes produits est autorisée par le Sénégal.

En outre, la section souffre de la lenteur administrative de l'USAID/Sénégal pour l'achat des pesticides, ce qui bloque le processus normal de la diffusion de ces produits. Admettant que ceci est un problème qui n'est posé que par les loudeurs administratives Sénégalaises, il est quand même nécessaire de le résoudre d'une façon ou d'autre.

D. Recommandations

L'USAID devrait tenir compte des réglementations en vigueur du Sénégal concernant l'utilisation des produits phytosanitaires et faire le nécessaire pour assurer l'acheminement rapide de ces produits sur le site du projet.

VII: INPUT DISTRIBUTION AND AGRICULTURAL CREDIT

A. Input Distribution

SOMIVAC/PIDAC has responded to the recommendation of the last evaluation by taking over the supply of inputs to farmers. It orders fertilizer and equipment directly from suppliers in Dakar, usually using USAID as a purchasing agent in order to circumvent cumbersome GOS purchasing requirements and procedures. It then distributes these inputs to farmers under various credit programs. The Division of Intendance and Cooperatives of PIDAC is responsible for distributing the inputs, allocating credit for their purchase and collecting debt repayments from the individual farmers concerned. PIDAC extension agents assist the zonal intendents with these activities.

For the second year in a row PIDAC was slow in getting the necessary inputs to farmers, though this year is much better than last. The problems affecting the supply of inputs by PIDAC are principally related to its legal status and the administrative rigidity which that imposes on its operations. Quality control is also a problem in its seed production program. Both these problems are discussed elsewhere in this report. When these problems are dealt with the situation should improve considerably. Additional actions do not appear necessary at this time.

B. Credit Program

Agricultural credit has a poor history in Senegal. The reasons are multiple:

1. vagaries of weather;
2. pressure from implementing agencies for farmers to order more inputs than necessary;
3. the ease with which credit in kind can be converted to cash to satisfy critical short-term non-agricultural needs.

4. sloppy program administration;

5. a general attitude on the part of agricultural officials that farmers are too poor and the investments which the credits finance too marginal to set interest rates at a level that can cover loan defaults and/or inflation; and

6. political expediency.

At least twice since independance Senegal has forgiven outstanding short-term or medium-term agricultural loans as arrears accumulated and repayment rates plunged. The most recent case was the 1981 indefinite postponement of outstanding loans owed to the now defunct National Office of Cooperatives and Development Assistance (ONCAD). At this point in time it is unlikely that any credit program that is less than swift and firm in dealing with corrupt disbursing and collection agents and/or farmers who fall behind in their payments will have a chance to succeed as a viable credit program in Senegal.

The credit fund provided in the Project Paper was to finance purchase by farmers of equipment not covered by the ONCAD credit program. After numerous delays, the final form of the program was finally agreed to in early 1983 when AID released materials and additional funding to cover the 1983/84 cropping season.

With the suspension of the ONCAD medium term credit program for agricultural equipment, the PIDAC credit program was altered to include animal traction equipment previously supplied by ONCAD. When the regular GOS short-term credit program was also suspended in 1982, PIDAC received approval from USAID to include fertilizer under the project credit fund. PIDAC also provides seeds to farmers on credit.

At the present time PIDAC operates its equipment, fertilizer and seed credit programs as separate entities. Equipment loans cover a five year period with five equal annual payments carrying a 10% rate of interest. The requirement of a 10% down payment has been dropped. Fertilizer loans cover one-half of the 50 F.CFA per kilo purchase price and are to be paid approximately 10 months after receipt at zero interest. Seed loans carry an interest rate of 12% and are due in April along with the fertilizer loans.

All loans can be repaid in cash or in kind, except fertilizer for vegetable gardening which must be paid for in cash. PIDAC will try to collect fertilizer loans in kind in order to increase the quantity of grain marketed. Reimbursements in kind will be stored in the departmental warehouses and sold to SOMIVAC at the end of the agricultural campaign. Money from the separate credit programs is deposited into separate accounts.

This is the first year in which the equipment and fertilizer programs have operated. Since no payments are yet due and inputs are just now being distributed, it is difficult to evaluate the operations. The seed program for 1982/83, on the other hand, had achieved a repayment rate of only 55% of principle plus interest as of April 10, 1983 - all loans being due at the end of April. It does not appear to have risen much above that level since that time. It is still too early to tell whether laxity in the seed program will carry over into the other programs but several observations appear pertinent.

1. A system of contracts written in the local language, signed by the farmers, the president of the G.P. and the encadreur, with copies sent both to departmental and PIDAC headquarters provides good documentation of transactions.

2. In spite of a literacy program aimed at the president and secretaries of the G.P's, the credit accounts of most G.P's are still being kept by the encadreurs. The level of literacy of the former is still too low to allow them to keep their own accounts. This is not a desirable situation. Literacy programs aimed at the presidents and secretaries of the G.Ps need to be reactivited and pursued until the G.P.s can handle their own accounts.

3. Of 32 G.Ps approved for equipment credit, eight did not receive it because their level of repayment of 1982 seed credit was below 80%. Supposedly, all peasants who have outstanding debts for seed or fertilizer must pay cash to obtain additional supplies. Many G.Ps, when faced with the prospect of being refused additional credit because of insufficient repayment of previous debts, have found the means to bring repayment levels up to the minimum required. However, the amounts outstanding in relation to new borrowings are small.

Though it is still too early to tell, the policy of applying a group sanction to enforce individual responsibility for repayment gives promise of working. However the current minimum repayment level of 80% is too low. Five percent arrears should cover the few special cases where delays in repayment will be justified. At this point in time program discipline is much more important than program coverage. With applications for equipment alone for next year running at 60,000,000 F.CFA versus the 20,000,000 distributed this year, demand for credit does not appear to be a problem. USAID should be careful lest a desire to push more money compromise the program's financial integraty.

4. Much of the credit for equipment seems to be going to relatively better off peasants. This should not be a concern in the short run. Once a successful and financially sound program is established and recognized as such by peasants, PIDAC can become more aggressive in distributing credit to lower income farm families. The overriding concern at this time should be to maintain the financial integrety of the program.

5. The multiple systems of credit will no doubt cause problems with record keeping. PIDAC should move to integrate the separate credit programs into single program with the same conditions for obtaining credit, the same sanctions in the event of low repayment and with a uniform interest rate. The fact that fertilizer credits are only for ten months with financing from USAID is not an adequate justification for not charging interest. It should also take advantage of the micro computer recommended for the PIDAC accounting office to maintain a system of accounts and provide regular reports on the financial status of the program. In addition, each credit program should have an incentive for paying cash, however small. Given the way the programs are administred this means that cash prices for all commodities should be lower than credit prices since interest charges are included as part of the price.

6. None of the programs envision an extra charge for late payment. Since the 10% interest rate is included in the fixed annual payment the effective rate paid falls as repayment is delayed. It would be wise to assess substantial late payment penalties to discourage indefinite delays in repayment.

In addition to an early and firm emphasis on repayment discipline , PIDAC trys to ensure repayment by verifying the financial soundness of the proposed investment and by ensuring its proper use by the farmer. We were not able to evaluate how well this task is being performed. The prevalent belief that farmers cannot afford to pay market rates of interest because the profitability of agricultural investments is low suggests that more attention needs to be given to preparing proper farm or enterprise budgets. If the profitability of these investments is indeed so low than it may be wiser to go slow on the credit program until national pricing policies make investments in equipment and fertilizer more profitable for farmers. However, the large demand for credit relative to supplies suggests that farmers find the investments profitable (or don't expect to have to repay the credit). Indeed there appears little reason not to raise the interest rate on all loans to the 12% level proposed for the new national agricultural credit program. Reinstituting the requirement of a 10% downpayment would also make sense as a way of making credit available to more farmers and providing a minimal cushion against defaults.

With the emphasis on repayment in kind for fertilizer as a means of generating cereal sales to PIDAC, marketing will take on increasing importance. Allowing farmers to make payments in kind at official prices effectively guarantees them a market for at least the amount of their outstanding payment, while still allowing them to realize higher prices in the parallel market when these are available. This policy makes excellent sense for the credit program but it does raise the possibility of getting PIDAC/SOMIVAC into an area where the private sector has a better record than development agencies. This part of the program bears watching as the credit program unfolds.

Finally there is little indication that problems expressed in the last evaluation concerning technical support for credit program investment have been adequately addressed. Spare parts for equipment are more available with the reopening of the old SISCOMA plant but availability of blacksmiths at the village level is still a problem. Inability to obtain credit for setting up operation appears to be the principle constraint. Meeting this need should be a priority for the special credit program.

There is little indication that extension agents have became any more effective in teaching farmers how to use their animal traction equipment. Technical packages are still incomplete with fewer than 20% of the farmers with plows also having cultivators. With weeding generally being regarded as the principle constraint in the Lower Casamance one wonders how farmers can expand their area under cultivation with animal traction unless weeding with animal power receives more attention.

The animal insurance fund no longer operates. This is really no big change since reimbursement under it was uncertain and subject to very long delays. Veterinary support to draft animals has been strengthened but we were not able to determine whether it is functioning satisfactorialy at the field level. It would seem wise to reconstitute the animal insurance fund at the level of PIDAC both to protect farmers and to permit quick repayment in the event of a justified claim. This should be a voluntary producer financed fund with annual payments a function of actual losses and expenses.

With respect to credit for the purchase of village level agricultural and food processing equipment such as threshing machines and flour mills, we urge caution. It appears that Promotion Humaine has already placed a large amount of this equipment in the field and much of it is not functioning. Before moving ahead with this addition to the project credit fund, DEEP should conduct a study of just what equipment is available at the village level, how it is functioning and the reason why particular pieces are not operating.

C. Recommended Changes In The Credit Program

PIDAC should move to integrate all its credit programs into a single program with common terms. PIDAC should not give credit to any individual in a G.P. that has not paid at least 95% of all outstanding principle and interest due as of the date the new credit would become effective. The programs should charge a common interest rate of 12% and require a minimum downpayment of 10% as a condition for obtaining credit.

IX. LE ROLE DES FEMMES DANS LE DEVELOPPEMENT

A. L'Etude du NCNW

Le document contient des données quantitatives appréciables pouvant être intégrées dans d'autres études de la question.

Cependant l'analyse qualitative est faible et les conclusions sont discutables à bien des égards. Les femmes y sont présentées comme des victimes plutôt que des agents du développement.

Autres études faites sur la femme en société Diola montrent que celle-ci occupe des positions importantes et joue un rôle décisif dans leur communauté. Ces éléments doivent être pris en considération dans l'élaboration de programmes communautaires. Les femmes jouent souvent un rôle important dans la mise en place de programmes au niveau local.

Le rapport n'analyse ni la façon dont les femmes et les hommes coopèrent au niveau socio-économique, ni l'interdépendance existant leurs rôles sociales et économiques respectifs.

Les programmes qui s'adressent aux hommes ou aux femmes doivent tenir compte de l'articulation dynamique et complémentaire des rôles socio-économiques des deux sexes.

B. Evaluation of Proposed Activities of Volet Féminin

Les femmes constituent la majorité de la population totale et de la population active en Basse Casamance. Au niveau économique, les femmes sont la principale force de main-d'oeuvre dans la production agricole et surtout maraîchère. En outre, elles mènent des activités économiques diverses telles que l'extraction et la vente de l'huile de palme, la cueillette et la vente d'huitres et de fruits. Dans le domaine socio-culturel, la femmes est l'actrice principale dans les activités comme les fénurailles, la circoncision, le baptême, le mariage et l'éducation des enfants.

Le condensé du Document du Projet prévoit, après l'analyse des bénéficiaires, de faire des efforts en vue d'intégrer les femmes dans le programme de ce projet intégré de la Basse Casamance. "La méthode utilisée est de leur donner accès à des programmes réguliers tels que la vulgarisation agricole, la santé, l'alphabétisation et le crédit agricole pour l'achat de moulin à riz, de batteuses, de pompes à eau et d'autres équipements qui serviront à alléger leurs tâches."1/ Pour accomplir tout cela, une cellule de Promotion Féminine dénommée Volet Féminin est créée au sein du PIDAC .

1. Le Volet Féminin

a. Historique. La cellule dénommée Volet Féminin a été mise en place au sein du PIDAC en septembre 1982 et rattachée à la Division Agro-Vulgarisation. L'équipe a repris à son compte le canevas de travail réalisé par l'ancienne responsable du Volet, démissionnaire. Elle a reçu la lettre d'exécution du budget de démarrage pour la réalisation de son travail, mais jusqu'à ce jour on attend le déblocage des fonds pour former les actions et démarrer pleinement les actions fixés.

b. Rapport avec les Autres Structures. Comme dans beaucoup de projets de développement, le Volet relatif aux femmes est demeuré la "parente pauvre" du projet intégré de la Basse Casamance et il a accusé un trop grand retard par rapport au démarrage du projet. Les raisons de cette situation relèvent autant de facteurs subjectifs qu'objectifs tels que:

- le manque d'intérêt et de perception claire de la part des responsables (qui sont presque toujours des hommes) des actions à mener en direction des femmes si ce n'est le scepticisme quant à la nécessité d'une telle entreprise;

- l'impossibilité dans les milieux ruraux africains d'engager directement des actions auprès des femmes sans avoir au préalable saisi les hommes, gagné leur confiance, et obtenu leur accord;

- la difficulté de la conception des actions et de la stratégie du Volet, de la part de la responsable due à son niveau de formation;

1/ Condensé du Document du Projet, p. 28

- Le manque de maîtrise du milieu par l'équipe du Volet faute d'une approche méthodologique adéquate. On note aussi un certain manque de dynamisme dans l'application du programme du Volet dans certains départements.

En tant qu'agent et force de production, les femmes sont intéressées par tous les aspects du projet comme le montre l'Annexe B. Le Volet Féminin doit en conséquence agir au sein du PUDAC de manière intégrée. Il doit être un trait d'union entre les divisions, les sections et les femmes. Il doit établis entre eux un feed-back, être le porte-parole des femmes auprès des différentes divisions du projet et d'aider celles-ci à passer leurs messages auprès des femmes. Pourtant, à l'heure actuelle on constate un manque potentiel de coordination. Il faut noter par rapport au canevas du travail du volet que:

- Le programme d'éducation sanitaire envisagé dans le Canevas de travail du Volet Féminin risque de faire double emploi avec le Volet Santé qui se fixe cette même tâche.

- Le programme de "Matériel post-récolte" qui dotera des femmes avec l'équipement afin d'aider à l'allègement réel des travaux domestiques féminins comme les moulins, risque de faire double emploi avec le programme du crédit agricole. En plus, comme il n'y a pas mal nombre de telles machines dans les villages actuellement en panne il devrait faire au préalable le point sur ceux qui existent dans les villages à encadrer avant de lancer cette activité.

- Le programme ayant trait à l'énergie renouvelable, est déjà entamé par le NCNW mais doit être poursuivi et généralisé par le Volet Féminin pour ces multiples avantages 1/ afin de lutter entre autres contre la déforestation progressive qui menace cette zone.

En plus, le Volet Féminin ne reçoit pas les indemnités de déplacements.

1/ Cette technologie a d'après les femmes, l'avantage de réduire la consommation du bois, du temps de cuisson, de la fumée, et les risques de brûlures des enfants. Elle conduit à l'allègement d'une des tâches jugées par les femmes comme la plus pénible après le puisage et le pilage: à savoir la recherche du bois.

Le Volet Féminin doit faire de la véritable animation rurale. Pour ce, il faudra assurer une formation solide aux animatrices et coordinatrices afin d'en faire de véritables agents de développement. En même temps il faut intégrer aux actions du Volet l'Alphabétisation Fonctionnelle pour éviter la perte des acquis. Pour ça, il importe de remettre le Volet Féminin dans une Division Formation et de l'élever au rang de Section de Promotion Humaine. En plus, le Volet Féminin devrait assurer une réelle collaboration avec les services qui ont les mêmes cibles que le Volet Féminin, à savoir: la Promotion Humaine et le Programme de Protection Nutritionnelle et de la Santé (PPNS). Finalement, le Volet Féminin doit tenir compte des capacités et des traditions des femmes à s'organiser elles-mêmes et accomplir des fonctions importantes au niveau de la communauté notamment dans l'exécution, la santé et le déploiement des forces de travail.

c. L'Activité de Conservation et Transformation des Fruits et Légumes. Les actions de ce sous-volet qui est sous la responsabilité de Mlle Janine Timberlake viennent d'être intégré au Volet Féminin. Elles ont pour but d'initier les femmes aux technologies nouvelles de conservation des fruits et légumes et d'aider à résoudre le problème de la surproduction des produits maraîchers qui sévit ces dernières années en Basse Casamance. A ce but le projet a construit des séchoirs solaires dans quatre villages pour faire les villages-tests. Il fait des expérimentations avec les autres méthodes de conservations aussi. A partir des produits conservés il feront les essais auprès des consommateurs pour déterminer l'acceptation dans les habitudes alimentaires.

A cause des délais administratifs relevant autant de l'AID que de la SOMTAC, la construction des séchoirs solaires n'étaient pas réalisés qu'après la récolte. A ce moment là, on ne trouvait plus de produits qu'à défaut d'écoulement des produits, le projet a du acheter des produits au marché pour continuer ses expérimentations.

A propos des activités de conservations on a quelques observations à soulever:

- l'activité et la surveillance du séchage constituent un surplus de travail pour la femme;

- la préparation et la consommation des produits séchés ne sont pas encore entrées dans les habitudes alimentaires. Or, nous savons toute la difficulté à reconvertir celles-ci;

- les autres méthodes de conservation (solution salée dans canaris, etc..) ne sont pas encore au point.

Il faudrait donc approfondir l'expérimentation dans les villages-tests et au niveau de la consommation avant de procéder à une grande extension de ces activités.

Enfin, on constate que Mlle Timberlake n'a pas encore d'homologue. Pour en nommer une, il faut envoyer une personne initiée à la question du maraîchage et de la transformation en stage de formation aux techniques de conservation de fruits et de légumes à l'ITA.

d. La Culture Maraîchère. En Basse Casamance les femmes réalisent 8 à 90% de la production maraîchère. C'est une des activités économiques principales qui leur accorde le numéraire pour acheter des denrées de nécessité. Mais à cause de problèmes d'écoulement, cette activité est limitée dans le temps comme source importante d'augmentation des revenues des femmes. Le sous-volet conservation de fruits et des légumes est une approche aux solutions de ce problème. Autres approches devraient être aussi envisagées:

- organiser les femmes en groupements de promotion féminine en tenant compte des systèmes actuels d'organisation des femmes et des spécificités;

- s'appuyer sur ces organisations des femmes pour organiser l'écoulement des produits maraîchers dans les marchés proches ou lointains, octroyer du crédit pour les investissements "matériel post-récolte" et pour mieux résoudre les problèmes de la santé en milieu rural;

- mettre à la disposition de ces organisations dans un premier temps les camions du PIDAC jusqu'à ce que leurs production maraîchères soient assez importantes pour intéresser les commerçants privés;

- demander à l'ISRA de faire des recherches afin d'améliorer les produits maraîchers (oignons, par exemple) pour mieux soutenir la concurrence avec les produits importés; et

-encourager les semis précoces et les semis tardifs afin d'augmenter la durée de la saison.

e. Conclusions. Le Volet Féminin a accusé un retard certain par rapport aux autres activités du projet pour des raisons de plusieurs ordres. Il n'en demeure pas moins que les femmes sont en tant qu'agents de production touchées par l'encadrement du PIDAC.

Aujourd'hui, la situation semble plus transparente (sensibilisation des responsables, envoi de lettre, l'exécution, mise en place d'une équipe féminine). Il importe de tout faire pour que le Volet joue pleinement son rôle, qui est d'intervenir dans tous les aspects qui touchent la femme afin d'améliorer leur qualité de vie. Pour ce, il importe de voir la femme dans sa triple dimension de mère de famille, d'épouse et d'agent économique et social.

Le Volet Féminin doit tendre aussi, mais de manière souple, à agir sur les mentalités des hommes et des femmes, en vue d'une meilleure complémentarité entre l'homme et la femme, de leur réel épanouissement. Il s'agira de la part de l'équipe du Volet Féminin d'agir de manière intégrée. La réalisation du programme du canevas nécessite l'organisation des femmes en groupement de productrices; il suffira tout simplement d'officialiser les associations des femmes de village déjà existantes et qui s'avèrent opérationnelle.

Les résultats de l'étude du NCNW qui constituent une masse de données sur les conditions de vie et de travail des femmes rurales en Basse Casamance doivent être mis à profit par le Volet Féminin dans ses investigations et son action. Ces résultats peuvent être utilisés par les organismes de développement et des planificateurs qui cherchent à agir en direction des femmes. Cependant, certaines analyses qualitatives doivent être au préalable approfondie

L'action de transformation et de conservation des fruits et de légumes demeure encore au stage expérimental, on ne peut pas en tirer de grandes conclusions. Sans être une solution, elle pourrait à long terme, si l'expérience s'avère positive et que la consommation des légumes et fruits secs entre dans les moeurs, aider à la résolution de la surproduction maraîchère et de la sous-alimentation.

Tous les aspects du projet intéressent les femmes en Basse Casamance car autant que les hommes, elles agissent sur l'échiquier de la production agricole. Il appartient au Volet Féminin de jouer un rôle actif pour que les femmes bénéficient pleinement des actions du Projet Intégré en Basse Casamance.

C. Recommandations

1. Elever le statut du Volet Féminin au rang de Section Promotion Féminine et l'incorporer dans la Division Formation à créer. A la fois démarrer l'application de son programme d'action en débloquant le budget du Volet Féminin dans les meilleurs délais et en lui apportant une assistance technique chargée de la conception, de la stratégie et de la programmation d'actions.

2. Aider à résoudre les problèmes aigus de l'écoulement des produits maraîchers en s'appuyant sur la planification de la production, la recherche sur la conservation et la transformation des produits, l'organisation du transport et de la commercialisation.

3. Incorporer les associations traditionnelles des femmes dans l'élaboration des programmes du Volet Féminin non seulement pour identifier leurs besoins matériels mais aussi pour organiser l'exécution et l'évaluation des programmes de développement dans leur communauté.

X. MONITORING, EVALUATION AND PLANNING

Within SOMIVAC, the Directorate of Studies, Evaluation and Planning (DEEP) is responsible for initiating, conducting, and coordinating studies, developing sub-project proposals, and monitoring and evaluating all rural sector activities in the Casamance. In the absence of experienced managers and senior researchers, it has been unable to fulfill its manifold role adequately, although it has been more successful at some efforts, such as data collection, than at others, such as project development and planning.

A. Planning Activities of DEEP

The precursor to DEEP, the Unité de Plannification Regionale (UPR), produced the 1978 Plan Directeur de Developpement Rural de la Casamance. At the present time, however, DEEP does not have an in-house capacity to develop and/or update an overall integrated rural development plan for the region. HARZA has been assigned that task under a USAID contract. DEEP oversees that work, much of which follows broadly the outline of the Plan Directeur. Apart from this monitoring function, DEEP does no regional planning. What planning is done at SOMIVAC is done at the level of the planning advisors though, even at this level, planning is weak and needs to be strengthened.

DEEP's main role in planning has been to develop a bank of small scale development sub-projects of local rather than regional interest, such as village poultry production and village pharmacies. While the quality of this work has thus far been uneven, we feel that DEEP should continue its efforts in this area. It needs to link these village level project identification efforts more closely to the Rural Community Councils in order to assure integrated development at the local level. We also urge DEEP and USAID to designate participants for in-country training in project identification and preparation.

B. Project Evaluation

Since 1982, the Monitoring and Evaluation Unit (Cellule de Suivi et d'Evaluation) of PIDAC has been integrated into DEEP, staffed by a sociologist, a statistician and an expatriate evaluation systems technician. Two micro-computers with trained operators provide the means for data processing and, eventually, analysis.

1. Studies Conducted in 1982/83

In 1982/83, the Evaluation Unit collected data at several levels.

a. An initial census of five villages in Bignona Department (272 exploitations) provided the basis for stratifying the population by level of contact with extension agents for more intensive study.

b. An intensive study grouped 101 of the above exploitations into three levels of contact. Thus far, the analysis of cropping practices and patterns has been modest.

c. A study of labor time and family budgets was carried out in two of the above villages (48 farming units). Analysis will follow at the end of the 12 month collection period.

d. An extensive survey of 2,000 randomly selected farm units covering 42 villages was conducted. A draft report with cross tabulations is currently being prepared, emphasizing the relationship between adoption of selected practices and contact with extension agents.

2. Observations

With respect to accomplishing its work program, the Evaluation Unit of DEEP has had good success since its transfer from PIDAC in early 1982. In little more than one year the unit has mounted and executed both extensive and intensive surveys of agricultural production and adoption of extension recommendations in the PIDAC project area. It is expected to publish its findings within the three month period following the evaluation team's visit. This is no small accomplishment and stands in contrast to the two to four year turn around

time for similar efforts elsewhere in Africa. It is due largely to the hard work of the evaluation team in the face of an unusually large number of logistical and administrative constraints.

Without in any way belittling these efforts of the Evaluation Unit, this emphasis on speed has prevented careful reflection on methodology and analysis. As a result, it has compromised the usefulness of data gathered thus far with respect to a meaningful evaluation of the impact of the project on agricultural production. The evaluation team feels that too much of the unit's time and thought in its first year of operation has been devoted to data collection and tabulation and not enough to preparation, definition of terms and to analysis and interpretation of the results. A report on the first census, for example, might have helped identify more useful definitions of paysans encadré and primary sample units for the various levels of analysis which are needed. Reporting these results and discussing them with other agencies (ISRA, Ministry of Rural Development, etc.) may have helped the unit to get a better idea of why it is collecting the data, which in turn, might give it a better idea of which data to collect, and how to present them. As a result, it would very probably have exposed problems with sampling methodology that have forced the team to adopt an analysis strategy which emphasizes binomial relationships and incompletely specified multivariate models. This approach risks presenting misleading information and making an incorrect evaluation of the impact of specific practices.

3. Other Data Needed

a. Social Indicators. Few social indicators are included in the data collection schedules, and those that have been collected are not touched upon in the analysis done so far. We propose that DEEP collect more social indicators data such as ethnicity, level of education, food consumption and anthropometric data on children. Such information would be useful both as baseline information and, in connection with

the health component, as a basis for determining possible project interventions. It should also be easy to include questions designed to measure level of living (housing, equipment, etc).

b. Data on Non-Farm Units. Data for regional planning purposes should be collected or gathered from secondary sources on larger units such as villages, rural communities, and PIDAC zones. The 1976 census, prefectoral demographic and tax information, and other data available from various regional governmental agencies should be integrated with the micro data for a greater perspective. Information not otherwise available may be gathered through informed or key informant survey techniques.

4. Dissemination of Research Results

The cost of the research establishment is only justified if the results improve the interventions that the project provides. For this to occur, research reults must be communicated to potential users at all levels, not just to Directors. Horizontal linkages among researchers in different institutions (ISRA and DEEP, for example) are just as important as vertical linkages between SOMIVAC, DEEP, extension agents, and farmers. Clearly, the presentation and discussion of such research results should be tailored to the audience. DEEP has a large task to fulfill in this respect.

5. Additional Assistance Required

The DEEP evaluation program needs assistance with conceptualization of research design, development of evaluation methodologies and models and with analysis of data once it is collected.

To help DEEP in this endeavor, we believe that the current technical assistance staff requires ongoing support from an experienced evaluation researcher. Such a researcher should work to develop an interdisciplinary evaluation team including an agronomist, an agricultural economist, a sociologist

and a statistician. He/she should encourage the DEEP evaluation team to collaborate more closely with farming systems researchers from IRSA and with PIDAC extension personnel at each step of the research process. In particular, the unit needs assistance in the following areas:

1) identifying sampling methodologies which will allow a more definitive evaluation of project impact in spite of the absence of baseline data. This would probably include stratifying villages and farmers within villages according to an unambiguous measure of previous extension contact.

2) identifying the kinds of analyses and the specific data needed to evaluate rigorously the impact of selected aspects of the project. This would require construction of dummy tables, identification and discussion of models to be explained and definition of key variables, indicies and aggregation groupings prior to finalizing questionnaire design or beginning analysis.

3) designing questionnaires, data collection and data tabulation methodologies that more realistically take into consideration the limited capacity of micro-computers. This will be feasible once the analysis and data needs are more completely specified and prioritized. Unncessary information can be kept to a minimum, data can be aggregated into key analysis variables prior to constructing data files and files can be constructed around specific analysis objectives rather than entire household records.

In addition to obtaining additional senior level technical assistance, DEEP should establish and train a team of research technicians to prepare data for entry into computerized files and assist with routine analysis activities, table presentation, data display, etc. This will leave time for the senior evaluation personnel to conceptualize models, interpret data and insure the timely communication of results. Personnel for such a team should be drawn from existing DEEP staff.

Even with the aid of an experienced evaluation researcher,

it is not realistic to expect to develop and fine tune a suitable data collection/evaluation methodology for agricultural production projects in one season. It takes time and experience to discover the particularities of each production system and institutional context. It is almost guaranteed that the first survey will have many gaps that prevent realization of evaluation objectives--especially when data collection must begin so soon after arrival in country, as was the case with this project. Recognizing this, it is imperative that the evaluation unit be given adequate time to carry through the analysis of data already collected before continuing to collect still more information. This will expose flaws in methodology and design and will greatly increase the completeness of subsequent data collection efforts.

In hindsight there is no doubt that the evaluation unit compromised its effectiveness by attempting to do too much too fast given its late start. Its work should never have been programmed to cover less than two production seasons--the first one being used to identify the use of practices, understand the farming system and plan the collection methodology for, and the analysis of, the production data. The second season could then have been devoted to collecting and analyzing the production data.

With respect to the future, USAID has little choice but to finance expatriate assistance to the unit for the remaining two years of the first phase. The remainder of this year should be spent analyzing available data and conducting another extensive survey to determine which practices are used by whom on what proportion of area in production by crop and how these are related to various measures of previous contact with the extension service over time. The evaluation team should also rely more heavily on informal survey techniques to determine why farmers do not adopt specific practices for individual crops. This information will then help to more clearly define the types of production related information needed to be collected and analyzed during the 1984/85 production season.

C. Project Monitoring

Prior to the transfer of the PIDAC Monitoring and Evaluation Unit to DEEP, most of its efforts were devoted to reporting project accomplishments. Since its transfer to DEEP, the unit has concentrated almost entirely on impact evaluation and has seen its area of responsibility expand to include the PRS and the FAC projects. Over the entire period of the unit's existance, very little attention has been given to process evaluation, i.e. monitoring project performance with a view toward improving technological packages and/or delivery systems.

The evaluation team agrees that DEEP should have responsibility for impact evaluation activities. However, monitoring of project performance, especially delivery systems and peasants' responses to the messages and techniques by which they are diffused, should be the responsibility of the individual projects, in this case, PIDAC. The evaluation unit could provide technical assistance to project monitoring units both with respect to methodology and data tabulation and analysis but the actual work should be carried out by the projects.

At the present time, PIDAC extension agents report monthly or quarterly on their activities. These reporting systems are designed to provide quantitative information for monthly reports at all levels of the project. They are not critical in purpose and devote very little attention to how farmers react to the services and recommendations of the project and the reasons for lack of progress. Rarely does the analysis go beyond noting the lack of means to do the job. The approach or content of the program is seldom questioned, what farmers actually learn is seldom tested. It is unrealistic to expect a formal reporting system in a hierarchical structure to provide by itself the kind of critical information necessary to insure effective monitoring of project activities. At the same time, it is unlikely that DEEP could muster the

resources to provide the continual focus on individual project activities necessary for effective monitoring. Since much of the information needed for effective monitoring can be gathered through regular reporting and feedback systems, the evaluation team recommends the creation of a PIDAC monitoring and liaison unit responsible directly to the Director of PIDAC.

The PIDAC Monitoring and Liaison Unit should have responsibility for establishing permanent systems for monitoring the performance of all the activities of the project: i.e., the level of technical knowledge of extension agents; quality of training received by both agents and farmers; the level of functional literacy achieved by program participants; completeness of adoption of extension themes and the reasons why some are not adopted, or are only partially adopted, the level of use of equipment and inputs distributed by the project, etc. In collaboration with ISRA researchers, this same unit should oversee on-farm trials of extension themes proposed for diffusion.

In general, the project monitoring units should limit the formal collection of primary data as much as possible and rely heavily on verification of performance data generated by the field agents of the various project activities as part of feedback systems established for this purpose. This would include in-house discusssions with various divisions concerned with program administration as well as informal discussions with field agents and farmers. The unit should issue quarterly reports on its findings. More frequent reporting of project accomplishments would be the responsibility of the executing services.

During the first two years of its operation the PIDAC Monitoring and Liaison Unit should be under the direction of a senior expatriate monitoring and management specialist. This same specialist would provide support to the DEEP Evaluation Unit but his primary responsibility should be to PIDAC, not DEEP. The unit would also need a Senegalese agricultural economist or sociologist and several assistants

to work with the monitoring specialist and to take over responsibility for the unit once the monitoring systems are in place and functioning on a regular basis. Monitoring responsibilities would include various aspects of project management as well as the effectiveness of specific project activities.

With an effective monitoring system, PIDAC can begin to identify many of the reasons for poor project performance, initiate serious discussion on how to overcome them and then revise on-going activities accordingly. With a unit attached to the Director of PIDAC all these elements would be under the control of a single level of decision-making and, as a result, should lead much more quickly to effective corrective action.

D. Coordination of Research in the Region

1. Sample Surveys

In the past year, ISRA, HARZA, DEEP, and the NCNW all studied farming, farmers and the rural sector in the Casamance. All involved intensive collection of data, frequently the same or similar kinds. To our knowledge there was little coordination between these studies.

At the present time, the Research and Development Committee is weak and provides only informal direction for research on technical agriculture. It provides no direction for social science research activities, though informal collaboration sometimes takes place between individual researchers. It needs to take a stronger role in planning and coordinating social science research activities in the region.

2. Improving Regional Agricultural Statistics

As in the case with sample surveys, more coordination between DTO/SOMIVAC and the Regional Agricultural Service is needed to expand the reporting of statistics on cropping patterns and yields, both in breadth and depth of coverage. Fruit, vegetable and perennial crops, poorly measured now, should be included. The data collected regularly by FIDAC

and the other projects can be tailored so that they help to supply the needed information. The absence of resources in the traditional agricultural agencies means that SOMIVAC and PIDAC must be the ones to extend the hand of cooperation.

E. Use of Computers at SOMIVAC and PIDAC

Currently DEEP and DTO possess two Radio Shack Model 3 microcomputers with 48K core memory, two disk drives and an Epson MX-80 printer for each one. There are three problems that together mean that these machines are less than satisfactory for the needs of the research and data analysis required for the project: 1) they are not supported in Senegal; 2) the software apparently available for them is cumbersome, slow, and of limited flexibility; 3) the shear volume of data to be handled exceeds the innate capacity of the machine, no matter what the quality of the software. Since it is so difficult to do meaningful analysis with the existing machines given the data already in hand and that still to be collected, the team feels that USAID needs to take a serious look at alternatives to continuing with the current computer operation. Adding a TRS 80 Model 4, even with hard disk, will not be a sufficient improvement, and would, in any case, require re-writing many of the existing programs.

1. Microcomputer Software

The main software package provided for the analysis of data is Wolenik's STATPAK, now marketed as MAXISTAT. This package provides all the common descriptive statistics for univariate analysis, ANOVA, contingency tables, coorelation and multiple regression. There is an excellent break-down routine which allows the selection of subgroups for all the analysis techniques. The software is deficient in that no transformation routines are included in the package for the routine aggregation of several variables, calculating of ratios, percentages, exponential and log transformations and progressions which are key to data manipulation for the present applications. Separate subroutines must be written

in BASIC for aggregating variables and performing simple numeric transformations.

The software is also constraining in that it is limited to the use of one data disk. Most standard software packages allow the use of at least two disks for data files. Because of the large number of variables involved in the extensive PIDAC surveys, working files must be established with only those variables to be used in a particular analysis if the entire sample is to be considered due to the large sample size. The strategy to date has been to establish separate files for regions and repeat the same analysis for each region, rather than considering the entire sample and using the region as one of the variables. This makes for slow tabulation and requires much time to perform analysis.

The menus and screen routines for the software are in French but the manual for the package and in fact all manuals for operation and use of the systems are provided only in English. As Radio Shack is widely retailed in France, it would seem possible to acquire technical manuals as well as software packages in French.

More powerful software packages are now commercially available which will run on a number of machines. It would be advisable to consider the use of a generalized data base package for file construction, data editing and simple transformations, totals, etc. and a compatible statistical package capable of handling all the statistical routines for large data sets. Examples of such packages which are user friendly and require no computer programming knowledge on the part of the user are the Ashton-Tate dBASE II and Northwest Analytical Stat Pak. These software packages are available to run on a number of different systems including the Apple II running under CP/M and the IBM PC. We are, however, not aware of any instances in Africa where these programs are being successfully used on agricultural production data of the kind being collected by the evaluation unit.

2. Microcomputer Hardware

To date there have been no problems of malfunctioning with the existing hardware except with an auxiliary disk drive which was returned to the U.S. for repairs. No service is provided by any of the microcomputer vendors in Senegal for Radio Shack computers, so service problems require shipping out malfunctioning components. At the very least a service diagnostic diskette, manual and training in trouble shooting should be provided for the computer operators. Providing a third system of the same brand for backup may solve maintenance problems in the short run but does not address the problem of local support once the project terminates.

The Apple II provides a very sturdy and well supported configuration which is widely used in development project activities. The 48K Apple II system (expandable to 64K RAM) with 2 disk drives providing 143 K of mass storage on each disk is approximately comparable in capacity to the Radio Shack systems presently provided to SOMIVAC. Apple III systems with 256 K and Apple IIe 64 K configurations are being sold and serviced by Microsen in Dakar.

The IBM PC is a much enhanced microcomputer technology based on the new generation 16 bit microprocessor. The IBM PC is expandable to at least 512 K of memory and provides increased mass storage for data and programs on double-sided, single density disks with 368 K on each disk. The IBM PC XT model provides one floppy, double sided, single density disk drive plus a 10 megabyte fixed disk for a total of 10,368 K of mass storage capacity.

Both Apple and IBM PCs are being introduced into the country with service being provided by the dealer representative in Dakar. Training in use of both the Apple II and IBM systems will be provided by the Ecole Superieure de Gestion des Entreprises, Dakar.

3. Conclusion

The choice of computer hardware should ultimately be guided by the availability of the most appropriate generalized software packages for the required applications, in this case, the statistical analysis of large sample survey data sets. However, one cannot ignore that the current system is in place, has trained operators and is functioning, even if not very effectively.

As a minimum, the present statistical software package (StatPak) needs upgrading with a generalized module for transformation routines so that data aggregation, percentages, ratios, logs, etc. can be routinely handled without having to write custom subroutines for each application. If the use of the present software is to continue, it should be modified to allow for using 2 disks of data files. In addition, manuals for software packages and hardware operation should be provided in French. Other software packages which have been provided (VISICALC and additional statistical routines) are not currently being used. If these are to become useful for future applications, the software and manuals will have to be made available in French and training provided in their use.

Alternatively, USAID should explore what other software packages are now available with enhanced capabilities that have been proven effective with large, agricultural production data bases. Once such programs are identified, serious consideration should be given to purchasing the necessary hardware and training the operators to run them. Obviously such a move only makes sense if it involves shifting to a model that can be supported within Senegal.

Should USAID decide to replace the current system, the existing Radio Shack computers would be very useful for getting the budgeting, accounting and payroll operations of PIDAC and SOMIVAC under control. The PIDAC computer could also be used to establish a monitoring system for the credit program that could give a monthly status report and help insure the close

supervision necessary to insure the success of this activity. With the VISICALC program already in hand, and the addition of a General Ledger program purchased from Tandy France with manuals in French, these computers would become very accessible instruments for the maintenance of accurate, up-to-date financial records.

Little training in computer programming would be required of the new users of the machines, as the accounting packages available are quite flexible and easily understood. $1,000 should purchase two copies of the software. One of the computers should be at PIDAC, the other at the Siege.

F. Reinforcing DEEP

To better perform its planning, evaluation and research responsibilities, DEEP should be restructured so that personnel can work in interdisciplinary teams with well defined tasks. Such a division of labor would allow for some degree of specialization and programming of tasks. At present, teams for various activities are formed *ad hoc* with staff being involved in several projects simultaneously. This diffuses responsibility and saps much needed vigor from the individual research, planning or data collection activities. With the interdisciplinary team, each member would take prime responsibility for the evaluation of some project or special activity but all conceptualization and analysis would be carried out as a team.

DEEP also needs the help of a *senior* specialist in research design and research methods to help younger Senegalese researchers acquire practical experience in defining sound approaches for generating and analysizing data needed for project design, appraisal and planning. The lack of research depth in DEEP generates a tendency toward procrastination and

excessively detailed analyses of poor quality data. At the same time, DEEP researchers are not skillful at identifying the relevant policy implications of their work. Working closely with a more experienced researcher should help overcome both problems.

In order to avoid an increase in the number of expatriate technicians assigned to DEEP the evaluation team suggests that the position of statistician be upgraded to that of specialist in social science research methodology. The new technician could then assume responsibility for creating and maintaining the regional data bank. This would provide a legitimate justification for the technician to become involved in the research activities of other DEEP researchers without appearing to question their competence as researchers. The specialist should, of course, be backed up with short term consultants as needed.

G. Recommendations

1. Reconstitute the PIDAC monitoring unit as a monitoring and liaison unit responsible directly to the Director of PIDAC. The unit should have responsibility for establishing feedback mechanisms to regularly monitor the effectiveness of the many activities of the project. This same unit should be responsible for on-going liaison with the ISRA farming systems team, under the coordination of the Director of DEEP.

2. Recruit a senior expatriate specialist in monitoring and management for the proposed PIDAC Monitoring and Liaison Unit to define, in collaboration with the Director of PIDAC and his staff, appropriate feedback systems for monitoring project performance. The same specialist should provide on-going assistance in research design and analysis methodologies to the DEEP Evaluation Unit.

3. Reduce the data collection activities of the DEEP Evaluation Unit over the next several months in order to permit a more complete analysis of data already collected and to facilitate the evolution of data collection and analysis methodologies more likely to permit a definitive evaluation of the impact of specific project activities.

4. Conduct a review of available in-country micro computer service facilities as well as software for data base management and statistical analysis and, in light of the findings, weigh the costs and benefits of upgrading versus expanding the current Evaluation Unit data tabulation operation.

5. Assign DEEP the responsibility for developing a regional data bank in machine readable form for development planning and evaluation by drawing together available data on rural communities and arrondissements and integrating these data with micro data gathered from farm-level surveys as well as those from the on-going data gathering programs of the traditional ministries.

6. Recruit a Senior Senegalese or expatriate specialist in social science research methodology to assist junior DEEP researchers design and execute efficient and effective research programs.

XI. LA RECHERCHE AGRICOLE

A. La Recherche sur les Systèmes de Production

Le programme de recherche sur les systèmes de production se propose de rendre la recherche plus apte à mieux répondre aux besoins réels de la majorité des paysans de la Basse Casamance. Trois objectifs spécifiques ont été dégagés à savoir:

1. Disposer d'une connaissance approfondie de l'environnement socio-économique dans lequel s'accroît le processus de production: identification des contraintes et évaluations des systèmes existants.
2. Identifier, expérimenter et évaluer des itinéraires techniques susceptibles d'améliorer les systèmes de productions actuels.
3. Contribuer à l'élaboration de méthodologie de recherche multidisciplinaire en milieu rural.

La démarche méthodologique adoptée par la recherche est la suivante:

- Collecte des données de base sur les recherches agro-économiques.
- Les enquêtes informelles qui sont une étape importante de la recherche système.
- Expérimentations en milieu rural en collaboration avec les autres chercheurs de l'ISRA et les agents de base du PIDAC.

The farming systems team is in the process of completing its final report. The evaluation team was not able to obtain a copy because of its preliminary state of preparation. However, we were able to observe the presentation of the team report in the last meeting of the Research and Development Committee of SOMIVAC/ISRA.

By all accounts the farming systems team at ISRA is a success. It appears to have effectively induced technical scientists at ISRA to collaborate with them in their farm visits, in designing their surveys and in interpreting the results. This is no small accomplishment for the first year of such a project. The team's approach is clearly oriented toward discovering why farmers do what they do and is already having an impact on the design of technical research programs at ISRA.

The analytical procedures being used do not appear to be particularly sophisticated. Since at this point the team is not trying to explain the importance of specific practices on yields this is less of a problem than for the DEEP evaluation study. Once they do move to this stage however, they will need to identify all the factors that influence yields and specify their models accordingly. In this regard they should work much more closely with the evaluation unit in DEEP in order to avoid costly duplication.

The principle problems facing the team have been logistical. Like other project researchers at ISRA, the farming systems team has been faced with continued delays and unnecessary additional work because of the unwillingness of the station director to delegate even minor responsibilities and allocate available vehicles to the project. This problem was corrected after a long delay but being an Etablissement Publique, ISRA is subject to many of the cumbersome GOS administrative procedures which plague SOMIVAC. The team still lacks adequate control over who it hires - an absolute essential requirement if data quality if to mean anything at all. These problems are discussed further in the section on management.

B. Analysis of Experiments Underway at ISRA

Overall, current applied agronomic research at Djibélor appears to be very much directed toward the problems of the Lower Casamance. A sampling of the more interesting work follows.

1. Intensification

a. Rainfed Rice The results of this first year of trials in farmers' fields shows that rainfed rice production is very risky. Yields obtained were low (500-900 Kg/ha) due to poor soil fertility, bird attacks at planting time and excessive weeds.

b. Phreatic Rice (Riz de nappe). One set of trials tested improved varieties which fit within the context of traditional cultural systems. Apart from bird attacks, the results were excellent (mean yields of 1700-2500 Kgs/ha). A different experiment on the response of phraetic rice varieties to mineral fertilizer was inconclusive in this its first year.

c. Riz Aquatique L'objectif était d'avoir une évaluation du potentiel de quelques variétés de riz aquatiques améliorées dans les systèmes de cultures traditionnelles. Les variétés améliorées ont donné mieux que la variété locale de "Djibilba".

d. Sorgho L'objectif était d'améliorer les rendements de sorgho dans les zones où cette culture est connue en utilisant des variétés améliorées et l'engrais. Le rendement des variétés améliorées a été de 100% plus élevé que celui de la variété locale cultivée dans les mêmes conditions.

2. Extensification

a. Utilisation de la Traction Bovine sur le Riz de Nappe Son objectif était de comparer deux modes de préparation des rizières: traction bovine, et la préparation manuelle du point de vue de l'utilisation du travail. Ces essais se heurtent aux problèmes des sols argileux des rizières qui sont très lourds aussi bien pour le matériel que pour les boeufs. Cependant, les dents canadiennes sont plus adaptées à ces sols que les charrues.

b. Méthode de Labour Cette expérimentation compare les préparations des rizières à plat et en billon avec le cayendo pour identifier leur impact sur les adventices et la demande en main d'oeuvre. L'essai a été récolté au niveau d'un seul site à cause d'une très mauvaise levée à la suite d'attaques de termites.

Une deuxième étude compare l'effet sur les adventices de deux modes de préparations du sol (billon et à plat) et évalue quatre types de sarclage sur le plan de l'efficacité et de la rapidité. De cet essai on peut retenir deux points fondamentaux:

- on ne perçoit pas l'avantage du labour à plat par rapport au billon;
- le sarclage mécanique après un labour à plat avec la charrue doit être encouragé.

3. Diversification

Research in this area includes determining the impact of planting date on niébé and sorghum yields, the performance of sorghum varieties under upland and phreatic conditions and evaluating the adaptability of selected sweet potato varieties in the Lower Casamance.

Other experiments are oriented toward off season agricultural production as these relate to the level of the water table and planting dates. The feasibility of getting a sweet potato crop from the residual moisture in selected rice lands is also being investigated.

4. Soil Rehabilitation

One study is examining the relationship of maize and rice yields to the level of the water table. Another study seeks to better understand salinity problems on rice lands.

5. Conclusions

D'une manière générale, la recherche a obtenu de meilleurs résultats sur les exploitations du Nord que celles du Sud. Ceci s'explique par le fait que le Sud (Oussouye) n'a pas changé de système de production et que le Nord a su s'adapter plus facilement à la variation de la pluviométrie. Aussi le Nord a bénéficié beaucoup plus des techniques de la recherche que le Sud. Cela ne veut pas dire que le Sud est hostile à toute innovation mais seulement il ne leur a pas été donné beaucoup d'alternatives. Ca veut dire aussi que le PIDAC devait revoir ses thèmes et les adapter aux particularités de chaque zone.

Le caractère de précocité de certaines variétés de riz se révèle très intéressantes pour les paysans dans la mesure où ceux-ci pourront dans l'avenir:

- emblaver les rizières hautes, avec un régime hydrique très court;
- emblaver les dernières rizières (basses);
- libérer assez tôt les rizières pour mettre en place une culture de contre-saison.

Des données recueillies, relatives au développement végétatif du mil sont également intéressantes.

Dans l'ensemble is nous paraît que l'ISRA/Djibélor s'oriente bien vers les besoins des paysans Casamançais. Il est très important et même nécessaire de reconduire ces essais en étudiant pour les meilleurs variétés, surtout ceux qui seront performantes dans le côté sud de la région.

C. Relations Entre l'ISRA et la SOMIVAC/PIDAC

Dans un réel souci de collaboration et de concertation la SOMIVAC et l'ISRA ont établi un protocole d'accord relatif à la création d'une cellule de liaison Recherche-Développement pour la région de Casamance. L'objectif de ce protocole est de permettre une meilleure adéquation des programmes de recherche avec les besoins et priorités du monde rural d'une part, et de faciliter le transfert des résultats de la recherche au développement d'autre part. La cellule de liaison est chargée aussi de coordonner la recherche qui a lieu dans la région, afin d'éviter la duplication et de maximiser son utilité.

Un des moyens d'établir des relations plus régulières entre l'ISRA et la SOMIVAC est de rendre plus fonctionnelle la cellule Recherche-Développement. La recherche parait bien vouloir s'intéresser aux problèmes des paysans en Basse-Casamance, et collaborer avec les services de vulgarisation pour trouver des solutions à ces problèmes. Mais les liens actuels entre l'ISRA et la SOMIVAC/PIDAC ne sont pas bien exploités.

Une deuxième réunion formelle de la cellule de liaison Recherche-Développement s'est tenue les 2 et 3 juin 1983, pendant la période de notre évaluation. Au cours de cette réunion de deux jours complets l'ISRA a présenté les résultats de la recherche conduite pendant la campagne 1982-83. En retour la SOMIVAC devait présenter et discuter ses actions passées et futures, et ensemble avec l'ISRA, mettre au point un programme de travail pour la campagne à venir.

Lors de la dernière réunion, la cellule Recherche-Développement a consacré peu de temps à la discussion sur les actions du PIDAC pour la campagne 1982/83 et à l'analyse des perspectives pour 1983/84. PIDAC y était représenté par un seul adjoint de la Division du Génie Rural. La DEEP, pourtant représentée par presque tous ses chercheurs, avait très peu à dire sur les raisons pour lesquelles les paysans n'adoptent pas certains thèmes techniques. Ceci est un problème parce que l'ISRA estime que la plupart des thèmes techniques divulgués par le PIDAC en Basse-Casamance n'est pas conforme aux conditions écologiques locales.

The bulk of DEEP's presentation was spent on the PRS even though the farming systems team has decided to concentrate on the Lower-Casamance initially. Even with that, DEEP researchers had great difficulty drawing conclusions that could guide ISRA researchers in their work.

We were equally dismayed that ISRA researchers did not try to help the DEEP researchers to look at their results with a view toward showing them the kinds of observations that they would find helpful. Even if the particular examples chosen were not quite suitable for the context, the necessary approach could have been clarified and future DEEP research rendered more useful for guiding the work of ISRA.

The main problem with the meeting, however arose from the scant representation of the services concerned directly with agricultural production. To be more effective the research and development committee needs to have greater representation by the technical divisions of SOMIVAC and more importantly, by the projects such as PIDAC. Only those DEEP researchers having research results which bear directly on the agricultural campaign of a particular project should make presentations. All division heads in PIDAC should be represented in at least one 1/2 day session in which they could discuss their results and prepare their future programs in close collaboration with ISRA researchers. If each project took 1/2 day, the number of people in any one session would be reduced and the effectiveness of the committee increased. There should also be a minimum of two weeks notification of the meeting date and more specific instructions on what will be discussed so participants can come better prepared. If each person making a presentation were required to distribute a two page summary two weeks prior to the meeting, the secretary (Director of DEEP) and the president (Head of Djibelor Farming Systems Unit) could set the agenda to ensure that each presentation conforms to the intended purpose of the meeting.

In addition to discussing the agricultural program, the Research-Development Committee is also responsible for coordinating research in the lower Casamance. At the present time there is no clear procedure for doing this.

To more effectively exercise its coordinating function, the president and secretary of the Research-Development Committee should routinely inform each other whenever a new research initiative is being planned, preferably immediately prior to preparation of the year's operating budget. When proposals are put forward which one or the other feels is related to a study it has underway or planned, they should schedule a meeting between the interested parties to coordinate their work. Each party should then write a summary of what was discussed and what was decided for submission to both the president and the secretary. They would then jointly determine what additional action might be necessary. With this system responsibility for ensuring coordination clearly rests on the president and secretary of the committee.

D. Recommendations

1. Modifier l'article trois du protocole d'accord entre l'ISRA et la SOMIVAC afin d'incorporer tous les chefs des divisions techniques des projets comme membres statutaires. Organiser les sessions de cellule Recherche-Développement selon les projets.

2. Etudier (par la DEEP et l'ISRA) de manière plus systèmatique les rationalités techniques, économiques et sociales pour mieux apprécier l'adaptabilité des thèmes techniques aux particularités de chaque zone.

XII. MAINTENANCE OF CONSTRUCTION

While it is generally agreed that the small Genie Rural construction service of PIDAC has had an exceptional record of achievement under the circumstances, it could have been better. With the exception of the inadequate ventilation system designed for the village constructed small warehouses, the designs done by PIDAC have for the most part been appropriate for their intended use.

By utilizing small contractors and providing the necessary materials, PIDAC has realized a substantial savings in construction cost. However, because of administrative delays encountered in purchasing building materials through SOMIVAC, progress has been very poor. Initially, construction materials were purchased by USAID/Dakar for the 1982 construction season. In 1983 it was decided to have PIDAC procure the building material. Given the purchasing requirements imposed on SOMIVAC by its legal status, it has taken up to 9 months in some cases to obtain the requested material. As a result, practically no new starts were realized in 1983 because of the lack of building materials. The funds were and are available but the purchasing system is far too complicated and cumbersome. To get around this problem PIDAC is now attempting a contracting procedure where the contractor is responsible for providing the required material.

Not withstanding the above delays, over the past 2 years, 1982/83, PIDAC's construction bureau has designed and began construction on the following infrastructures:

1. Four office/warehouses 75 m²; 100% complete.

2. Ten 50 ton warehouses; 100% complete.

3. The Bignona Department Office consisting of 223 m² of a reinforced concrete structure with masonary wall; electrical connection remaining.

4. A 95 m² classroom at Guerina training center; 80% finished.

5. Four office/warehouses 150 m²; 20% finished. Construction was initially under contract to a private firm but it has been cancelled and PIDAC will complete the work.

6. Ten wells for gardening centers.

7. Other construction ·

- Renovation and expansion of PIDAC main office.

- Five dams consisting of earth dikes done by villagers and cement sillways constructed by PIDAC.

- Seven 25 ton village warehouses with PIDAC providing materials.

- Several warehouse renovations.

- 64 m² classroom at Djibélor.

Without exception, the most disturbing, disruptive and frustrating element regarding the construction component of the project is PIDAC's inability to procure goods and services directly . For this construction season, October 1982 through June 1983, practically no materials were received by PIDAC more than nine months after PIDAC requested the material. To overcome these bottlenecks, PIDAC must be given the authority to purchase directly its required goods and services without passing through SOMIVAC. The proposed change in the statute of SOMIVAC would probably also accomplish this objective.

XIII. PROJECT MANAGEMENT AND ADMINISTRATION

A. Government of Senegal and SOMIVAC/PIDAC

The principle obstacles to realizing more progress in implementing the Casamance Regional Development Project are administrative and management related rather than technical. Unless these problems are addressed, the project has little hope of having any more of an impact in the future than it has had in the past.

In the context of the Casamance Regional Development Project, they cover four key areas:

1) The legal statute under which SOMIVAC is constituted and, related to this, the administrative procedures imposed on projects for ordering inputs and managing personnel.

2) The reliability of the GOS counterpart contribution, whatever the legal form under which the project operates.

3) Planning, programming and monitoring project activities to improve project performance. The definition of boundaries between SOMIVAC and PIDAC with respect to project execution is also a problem but does not so actuely affect project performance.

4) Financial management within SOMIVAC/PIDAC.

1. The Legal Statute of SOMIVAC

At the present time, SOMIVAC is an établissement publique de charactère industrielle et commerciale, making it subject to ex-ante control for important budgetary actions. More importantly, it must conform to a set of rules and regulations that severely limit the flexibility of the Director General of SOMIVAC vis à vis personnel management and the amount of responsibility he can delegate. He can delegate the power to make certain decisions but in the event of a misuse of power or a misuse of funds by a subordinate, the Director General is the one held responsible. He also needs prior approval of the office of Contrôle des Opérations Financières (COF) to make personnel changes. He is limited in the disciplinary action he can take against employees and cannot provide incentives for superior performance from GOS budgetary allocations.

These factors make effective personnel management very difficult and give rise to overly centralized and cumbersome management procedures that impede timely project implementation.

To order project inputs, SOMIVAC is required to aggregate all requests for supplies from its various implementing agencies for the year, and, when the amount exceeds 8 million F.CFA, to purchase them under tender. When the amount of the tender exceeds 20 million F.CFA, an amount easily exceeded for all important project inputs, the Commission Nationale des Marchés must rule on the appropriateness of the procedures used. This process takes anywhere from three months to one year. Most of last years tenders are only just being approved. As a result, the extension service was virtually immobile during the last production campaign. Extension agents have no notebooks, pens, tables or chairs, and USAID has to order important project inputs.

To solve these problems, the last evaluation team proposed that SOMIVAC seek to change its legal status to that of Societe Nationale. This status would permit SOMIVAC to arrange for its own tenders, would allow the Director General to delegate greater responsibility as well as decision-making to the Director of PIDAC, would make SOMIVAC subject to ex-post rather than ex-ante financial control and would give both SOMIVAC and PIDAC much greater control over project personnel.

While this approach has a certain amount of intuitive appeal, this evaluation team feels that such a change will create as many problems as it solves with the result that SOMIVAC will be no more able to carry out its mandate than at present. The most critical problem would be the persistent failure of the GOS to meet its budgetary commitments.

2. The Reliability of GOS Counterpart Contributions

USAID has met the GOS counterpart contribution for PIDAC from its own funds during each of the past two years. This year will no doubt be the third. The mistake that must not be made is to treat this as a short term problem.

Even when Senegal's financial straits were less dire, it

did not give high priority to meeting its counterpart contributions in a timely manner. It was an awareness of this problem and the negative impact it was having on the performance of many development projects in Senegal that led the project design team to provide substantial USAID support for operating supplies for the project.

The financial mis-management at the national level has implications for any project that depends on the GOS for non-salary support. Companies extending too much credit to the Government run the risk of going bankrupt as their outstanding accounts eat up their working capital. This presents problems even for relatively small expenditures which can be purchased with purchase orders. In many cases, merchants simply will not honor them. Until this situation is rectified with substantial reforms, i.e., structural rather than budgetary reform, there does not seem to be much hope for successfully implementing projects which rely heavily on timely delivery of inputs.

Changing the statute of SOMIVAC to that of Societe Nationale would not by itself change the extent of SOMIVAC's dependence on the GOS for financial support. Only the nature of that support would change--from a budgetary allocation to a subsidy. As a consequence, civil servants would no longer benefit from the Common Fund for Public Enterprises, a pool of revenues from all public enterprises from which the salaries of civil servants are paid. As a National Society, SOMIVAC would stand further down the line of potential claimants. As a result, it would probably not be able to meet its payroll when the government was late in its payments.

If SOMIVAC were completely financed by external donors, this problem would not present itself. Unfortunately, the amount of financing required would be too large for most donors to handle alone. Thus without a coordinated commitment from several donors for a reasonable length of time--something SOMIVAC does not have at this time--the problem of the un-

reliability of GOS project funding would continue to plague project implementation.

3. Planning, Programming, Execution and Monitoring

a. Planning and Programming. Planners need information on what is happening with respect to efforts underway, what is their impact, what new actions appear to be promising, and what their impact on specific objectives is likely to be. Planning presupposes predictability. Consequently, it also implies programming specific activities so as to fully exploit the potential interactions between them and to establish standards against which to evaluate performance.

SOMIVAC has only recently, with the arrival of the current Director General, begun a serious effort to program the activities of its various projects and divisions. Eventually, this will be carried to the point of defining work programs and objectives for each individual, expatriate and Senegalese, against which performance can be evaluated. It will also provide an effective vehicle for identifying points where appropriate and timely action is critical to realizing project objectives. This action, though commendable and long overdue, needs to be backed up by more coordinated planning by the projects themselves and by more effective systems for budgeting expenditures and for monitoring project implementation.

At the present time, DEEP functions as a study unit rather than a planning unit. The planning advisors are responsible for identifying and integrating the work programs of the various directorates and projects of SOMIVAC. Only the Director General has authority to compel recalcitrant Directors to provide the necessary information or to undertake programs or actions which are complimentary to actions planned by others.

Planning for integrated rural development projects should be as broadly based as possible in order to insure adequate consideration of the many interrelated aspects of local development problems. At the same time, responsibility for

planning needs to be clearly assigned and should include the means to force integration of programs if necessary and the right to assign tasks or programs to executing units in order to insure the coherence of the overall plan. In the context of Senegal, the structure of planning should be sufficiently participatory and depersonalized so that an ineffective Director or Planning Advisor cannot easily frustrate the planning and programming process.

Should USAID and the GOS decide to maintain SOMIVAC more or less in its present form, the evaluation team recommends that formal responsibility for regional and project planning be transferred from DEEP to a newly formed Planning Committee consisting of the Advisor for Internal Management Control of SOMIVAC, the Directors of DEEP, DTG, DAR and DAF, the Directors of the implementing agencies for which SOMIVAC is responsible and, as chairman and chief executive officer, the SOMIVAC Planning Advisor. Like each of its members, the planning committee would be responsible directly to the Director General and would, with him, lay down broad planning guidelines.

Day-to-day operation of the planning committee would be under the supervision of the planning advisor. He/she would initiate requests for work programs and insure their coherence both internally as well as within the context of the work programs of the other directorates and projects. The planning advisor would call meetings to identify potential interventions, arbitrate inconsistencies in work programs, fill gaps and identify and exploit potential growth linkages between the different components. Decisions would be made by consensus with all unresolvable conflicts referred to the Director General for resolution. The planning committee should also be responsible for setting priorities for studies carried out by DEEP.

All decisions with respect to project activities and program content by the D.G. should pass through the planning

advisor to insure that the planning committee is kept fully informed of important developments.

With this planning system, DEEP can provide necessary research and evaluation support while the important contribution each service can make to overall planning and programming can be respected. Responsibility is clearly defined without creating an authoritarian unit that increases rather than decreases unnecessary centralization.

A strong emphasis on planning, programming and coordination of implementation within PIDAC and other implementing agencies should parallel this stronger emphasis on planning at the level of SOMIVAC, subject, of course, to planning guidelines laid down by the Planning Committee.

b. Project Execution. There has been a tendency for SOMIVAC Directorates to become increasingly involved in project execution. The impetus for this shift has been the weakness of planning, programming and impementation within the project units.

In practice the line between execution and supervision of execution is not always clear. What is clear is that implementation of PIDAC work plans is constantly frustrated by orders from the SOMIVAC technical directorates relating to such things as use of vehicles, gasoline allocations, gathering data, work programs and by depending on SOMIVAC for ordering inputs. This duplication reduces the efficiency of the entire system, slows the flow of information and supplies and diffuses responsibility.

In an attempt to reconcile the need for central coordination and supervision of project activities with the need for much greater management and administrative autonomy at the level of the projects, we recommend that the SOMIVAC technical directorates be staffed with a smaller number of very competent technicians and be restricted to conducting larger scale technical and feasibility studies, formulating broad development

guidelines, reviewing the work plans of the projects, coordinating their execution, supervising the monitoring and supervision of operations and providing technical support to projects when requested to do so. The technical services attached to the individual project should, in turn, be responsible for preparing the work programs, supervising and monitoring current operations and reporting periodically to the central technical directorates on project accomplishments and problems. For project expenditures, the projects should have independent blocked accounts subject only to ex-post financial control once the work programs and annual budgets are approved by SOMIVAC. Excess personnel now assigned to the central directorates should be reassigned to the projects to strengthen their capacity to function more independently.

To further strengthen PIDAC's programming and implementation capability, we recommend that USAID and PIDAC establish a PIDAC Project Management Committee consisting of the heads of PIDAC's operating divisions, PIDAC's chief accountant, the SOMIVAC project coordinator, the senior monitoring specialist proposed for the PIDAC Monitoring and Liaison Unit and the USAID project manager. The Director of PIDAC would chair the committee. Ideally, the monitoring specialist would also have planning, programming and/or management expertise. This committee would assist the Director of PIDAC to plan and coordinate project activities, to identify management and implementation problems and propose solutions. Coupled with the strengthening of the technical divisions, this would allow PIDAC to function more independently and avoid many of the cumbersome management procedures which impede effective implementation at the present time.

c. Project Monitoring. The project paper envisioned a studies unit within PIDAC that would gather micro-level data, monitor and evaluate project activities and serve as a liaison between extension and research. The unit was originally constituted as a Monitoring and Evaluation Unit within PIDAC but was

eventually transferred to DEEP in order to raise the quality of the work being done by the unit and to concentrate all evaluation efforts at the level of SOMIVAC. In the process, monitoring, as distinct from reporting, has been all but forgotten. At the same time, the research liaison function is not well served by DEEP which, of all the Divisions of SOMIVAC, has probably the least knowledge of what is happening at the farm level.

It seems obvious to the evaluation team that both project monitoring and liaison with ISRA as it relates to the extension program of the project should be done directly by PIDAC, as was envisioned in the original project paper, rather than by DEEP. PIDAC is closer to the problems of farmers and their reactions to the extension themes offered by the project. PIDAC also should have the first opportunity to identify and correct problems. In this way, needed changes will surely be less threatening and more quickly implemented. DEEP should, nonetheless, supervise this monitoring and liaison work, being careful to avoid becoming involved in its execution.

Annex C summarizes in schematic form what the evaluation team feels should be the operational linkages between SOMIVAC and PIDAC with respect to management, monitoring and evaluation.

4. Financial Management

At the present time, the operating budgets for individual SOMIVAC projects are built up from the individual requests of project cost centers identified for accounting purposes. Within PIDAC, each cost center uses a separate format for presenting its budget. Once the arbitrage is complete and the budget is approved, PIDAC aggregates its needs for operational and other supplies. SOMIVAC then aggregates these with the needs of other projects before initiating procurement procedures. When the supplies arrive, they enter into a common pool and all SOMIVAC cost centers draw against them until they are exhausted.

The lack of a direct link between what a particular project

or cost center budgets and what it finally draws from the common pool is the mechanism by which those projects and cost centers having inadequate budget allocations can get more resources than budgeted. Even if every cost center within PIDAC planned its needs accurately, supplies will be exhausted before the work programs for the year are fully realized because other projects under SOMIVAC are underfunded. In effect, good planning is penalized.

Chronic problems over availability of resources are having a very negative impact on project morale and on relationships between expatriate and Senegalese technicians. Most expatriates feel that they have a right to expect the resources to do a good job of meeting their terms of reference. Though the resources actually made available to them are seldom adequate to do this,[1/] they do get more than most of the Senegalese technicians. This, in turn, causes resentment among the Senegalese who feel that it reduces their own effectiveness and makes them look less competent than the expatriates for reasons entirely related to the availability of resources for each.

The best way out of this situation would be for project directors to budget resources according to the annual work plans and demonstrated effectiveness of each technician and to respect those budgets. More effective technicians, whether expatriate or Senegalese, could be allocated greater amounts of resources but, more importantly, each technician would know at the start of the year what he would have to work with over the year and could modify his work program accordingly. Potential accomplishments would not be cut short because of an unexpected shortfall in resources. The programming exercise currently being done by the SOMIVAC planning advisors is an important first step in this direction. Access to a micro computer for budgeting and programming purposes would be an important additional step.

The financial management problem is complicated by the fact that part of the financing for operating supplies comes

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1/ The technicians reported functioning at 50-60% of their potential as opposed to a more independent mode of operating.

from the central government. When it does not meet its commitments, the total quantities planned for--and on which work programs are presumably based--are not available.

It is further aggrevated by the project's inability to prepare expenditure vouchers for USAID reimbursement within a reasonable time period. As unreimbursed expenditures accumulate--in the recent past for as long as 12 months--the GOS is forced to withhold further credit until PIDAC prepares and submits its vouchers for reimbursement. Similarly, USAID has recently refused to make further payments until large amounts of PIDAC expenditures are properly justified. In both cases, the providers of funds have little choice but to withhold further financing until PIDAC more fully meets its financial reporting obligations. Obviously project activities are seriously impaired when such sanctions are taken.

Within the past few months financial reporting within PIDAC has been improving, under the direction of a new chief accountant. Straightening out previous expenditures and records will be a monumental task. Coupled with payroll and gasoline coupon responsibilities, the unit cannot possibly get on top of things within any reasonable period of time without some additional help. With the very real possibility that a serious look at the DEEP Evaluation Unit micro computer operation will lead to a recommendation for upgrading both the hardware and software components of the system, it would make very good sense to move one of the existing micro computers to PIDAC and the other to SOMIVAC to use for payroll, gasoline coupon, bookkeeping and budget programming operations. USAID would need to provide three to four months of short term support for setting up the system as well as training in data entry. This change should, however, greatly improve financial management and, more importantly, provide a relatively easy means of monitoring key project expenditures and the project's credit operations on a regular basis.

B. ISRA

ISRA faces some of the same administrative constraints

as does SOMIVAC but on a much reduced scale. This is partly due to a difference in its legal status, partly to the nature of its work and partly to the relatively high level of training of many of its technicians.

Like SOMIVAC, ISRA is constituted as an etablissement publique de charactère industrielle et commerciale. Unlike SOMIVAC, ISRA is subject to ex-post rather than ex-ante control.[1/] This gives the Director General of ISRA the ability to delegate responsibility as well as decision-making. It does not provide any greater flexibility in dealing with personnel or salaries but the higher level of training and greater degree of professional review of many of its staff seems to generate greater work discipline. Moreover, since ISRA is not involved in large agricultural production operations, few of its input categories exceed 20 million F.CFA so there is less dependence on the Commission Nationale des Marchés for critical inputs. ISRA does suffer the same uncertainty as SOMIVAC with respect to the dependability of the GOS counterpart contribution.

With respect to internal financial management, ISRA allocates an independent budget to each researcher against which he can draw resources. These are based on the individual work programs. Unfortunately, the Djibelor Station Director has chosen to control the draw down of those resources much more than would be dictated by good management principles. As a result, delays in acquiring inputs or transportation are not uncommon and, like at SOMIVAC, much time is lost seeking signatures on purchase and travel orders. Station Directors also must ration supplies of available fuel and materials when tenders are delayed or GOS budget allocations are late. This leads to charges of favoritism and double standards when some individuals are more restricted than others. The most recent

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1/ This resulted from a change to the legislation creating ISRA imposed by the Supreme Court. The court, which must approve all legislation in Senegal, felt that the ex-ante control expected of an etablissement publique was not appropriate to the mission of ISRA.

station director, just transferred, seems to have been particularly restrictive with the USAID financed expatriate technicians. USAID project managers seem to have been slow in dealing with this apparent discrimination.

Like PIDAC, ISRA has problems preparing reimbursement vouchers within a reasonable period of time. ISRA also has a large amount of revenue owed to it by other African governments and by projects to which it supplies seed and vaccines or for which it conducts research. Such lack of fiscal discipline makes it next to impossible for ISRA to do serious programming and budgeting. These problems are systematic within Senegal. It's difficult to see how they can be dealt with in the absence of major structural reform.

All these problems take their toll on the research program. The farming systems team cannot control the hiring of key field personnel and has difficulty getting paper, vehicles and supplies in a sufficiently timely manner to insure the success of field surveys. Bureaucratic personnel and administrative procedures are simply not suitable for agricultural production and field survey activities where timeliness and individual responsibility are essential components of project success.

It is hoped the recent change in station director will reduce some of these problems. However, the system itself has not been altered so substantial change will be more a matter of chance than intelligent institutional reform. This is not a strong base on which to build an effective long term program.

C. USAID

1. Contracting and Procurement

In general, USAID administration and management of the project has not been a major problem. The emergence of SECID as a relatively effective contractor has moved USAID toward greater dependence on SECID as a contracting intermediary. With SECID there are fewer delays in contract renewal and

better support of personnel; but obtaining inputs does not move as quickly as it could. This is partly due to delays in receiving approval from the supply management office for SECID to make the purchases.

There have been delays in the arrival of several key inputs supplied by USAID. Partly these delays arise from the fact that the agency is increasingly being asked at the last minute to undertake purchasing activities that are not its responsibility in an attempt to circumvent GOS administrative problems. Delays in obtaining approval from the SMO to become involved in input purchasing appear to be related to a belief that this runs counter to the long term development interests of USAID and Senegal. With the arrival of the current Director General, SOMIVAC has tried to get a better handle on its purchasing activities but it is limited in what it can do by its legal statute and the related budgetary and ordering processes imposed by that statute. AID has also been slow in approving technical designs and in approving the use of selected pesticides. Delays in the arrival of funds, on the other hand, appear to be more related to the failure of PIDAC to provide timely and adequate accounting for previous expenditures than to USAID disbursement procedures.

2. Auditing and Financial Control

The recent external audit of PIDAC suggests that PIDAC needs closer supervision and, more importantly, help from USAID in putting in place an accounting system that admits of more effective control and supervision. The pooling of PIDAC resources with those of less well-funded projects should not be tolerated. At the same time, USAID will need to begin paying attention to the credit program accounts to insure the financial integrity of that operation.

3. The Role of the USAID Project Manager

The role of project technicians and of the USAID Project Manager are areas where feelings run strong both among the technicians as well as among the Senegalese. These both relate

to differences in points of view over how the collaborative mode of operating the project is actually functioning in practice.

The objective of the collaborative mode of operating appears to be to avoid the development of parallel development institutions and operating budgets that make a successful post-project transition to total GOS responsibility for project activities less likely to succeed. Project implementation will be more likely to expose for resolution those administrative and other problems that impede achieving project goals. This in turn, improves prospects for continued post-project growth and development.

Few would quarrel with the objectives of such a mode of operating. In practice, however, the collaborative mode works differently for each USAID technician. At the same time, the goal of avoiding the development of parallel institutions ignores the fact that PIDAC, as currently structured, is already a parallel institution, providing services to farmers that are even now being provided by the traditional services but at a much reduced level because they do not have the operating resources of PIDAC.

Those project technicians who are most satisfied with the collaborative mode of operating are those with project vehicles assigned to them or those who enjoy above average allocations of resources from their directors. Those who find themselves subject to the arbitrary exercise of power by their director of service or to a highly authoritarian (non-collaborative) management style that forces them to beg for resources are, needless to say, much less pleased.

Problems in making the collaborative mode work are very much related to the scarcity of resources arising from the financial management and administrative problems faced by SOMIVAC/PIDAC. Management problems are complicated by favoritism in the allocation of vehicles and a clear tendency

for Senegalese and, to a lesser extent, expatriates, to use official vehicles for personal use both during and after working hours. Better management of project vehicles and resolving problems related to SOMIVAC's and PIDAC's legal status should greatly reduce such problems.

In general, the evaluation team feels that management styles are too centralized at PIDAC and ISRA Djibelor. The USAID project manager needs to insist strongly on more collaboration in the identification and resolution of problems. This should include Senegalese as well as expatriate technicians working in collaboration with each other and with their director of division and should include developing annual work plans and determining related budget allocations. The project manager should also be more firm and responsive in dealing with directors of service regarding problems faced by the technicians. If problems can be approached even-handedly and with a perspective of similar treatment for expatriates and Senegalese in similar situations, than morale should improve and the project can benefit more fully from the positive aspects of collaboration.

There is a sense among the majority of the USAID technicians that the project manager should operate as a sort of technical coordinator for the expatriates attached to the project, especially at the level of PIDAC. At the same time, there is concern on the Senegalese side over project related contacts between the USAID project manager and project technicians about which they are not informed. The project manager sees the latter as unreasonable interference in the performance of his duties. Both of these tensions should be resolved by USAID and SOMIVAC/PIDAC more clearly defining just what the responsibilities of the USAID project manager should be.

Our own view is that the USAID project manager should either reside in Ziquinchor or spend half of his time there. He should be an integral part of the proposed PIDAC Project

Management Committee. He should, in this capacity, function as a technical coordinator for the work of the expatriate technicians and keep the SOMIVAC project coordinator informed of all technical discussions with project personnel. In this way, he could become a powerful force for improving project management and coordination without playing such a strong role that his departure would leave a vacuum. At the same time, expatriate technicians would feel they had someone to whom they could turn to for help in resolving particular problems they face in their work, and feel confident that some action would be taken.

D. Whither SOMIVAC/PIDAC

From many points of view SOMIVAC as presently constituted is in the way of development in the Casamance. If it did not exist, PIDAC could have an autonomous status under the overall coordination of the Regional Development Committee, perhaps itself being constituted as a National Society. A portion of the resources now going to SOMIVAC could be used to strengthen PIDAC in key operational areas. Even as an *etablissement publique*, PIDAC would be smaller in size and would not have as many problems acquiring inputs since fewer expenditure categories would exceed 20 million F.CFA. Sub-regional projects would be more attractive to donors and, if constituted as autonomous entities, would avoid many of the logistical problems caused by sharing resources with under-funded sister agencies. Autonomous sub-regional development agencies would foster the proliferation of national societies and/or projects to be sure, but that would be a small price to pay if it meant, in turn, effective development programs. Regional coordination between the individual projects could be assured by the Regional Development Committee and a small executive staff attached to it.

Reconstituting PIDAC as an autonomous project under the Regional Development Committee would avoid one of the more incongrous results of the current situation: PIDAC hiring

additional animatrices, extension agents and functional literary teachers while personnel attached to the traditional ministries in the project area are under-employed because of a lack of logistical support. It would also promote better coordination between the activities of the projects and the traditional services working in the project area since, unlike the administrative council of SOMIVAC, the Regional Development Committee includes the Regional Representatives of all the development ministries. Such a change would also seem to be more consistent with the administrative reforms of 1978-80 which gives more autonomy to the regions.

There are, of course, other possible solutions to the administrative and management problems currently plaguing PIDAC. As a national society, SOMIVAC could afford PIDAC essentially the same kind of autonomy it would have if it were itself a national society. Unfortunately, as a national society SOMIVAC would be exposed to much greater uncertainty than at present with respect to financing for salaries and for other projects under its jurisdiction. In light of current problems at SAED concerning the GOS counterpart contribution, accepting a national society status seems tantamount to a suicide pact for SOMIVAC.

Clearly, SOMIVAC has a problem that will not go away as long as it must depend on the GOS for financial support, whatever its legal status. If USAID intends to continue financing agricultural development in Senegal, this problem will have to be addressed--if not in the Casamance, then elsewhere. These problems are not unique to SOMIVAC and it would be illusory to think USAID can avoid them by cancelling this project and moving on to another one.

USAID should initiate immediate discussions with the GOS regarding a solution to the problems now facing SOMIVAC/ PIDAC The goal should be to obtain effective management autonomy for the Lower Casamance Project. This should include effective control over the acquisition of inputs, internal

budgeting and accounting, and autonomy with respect to hiring, firing, managing personnel and executing its work program. It should also include fuller integration with existing GOS technical ministries within the project area, perhaps with the project absorbing all personnel of the relevant ministries from the department level on down. At the end of the project, these personnel could simply return to their parent ministry and be reabsorbed into the civil service while continuing work already underway. In return, USAID could promise on-going, long-term (15-20 years) support for project activities with USAID picking up 100% of all non-salary expenses into the indefinite future. To the extent salaries are being paid at the present time, USAID could offer to replace these over time with an equal or greater amount of operating support for SOMIVAC or other sub-regional projects instead. It is imperative that the GOS not be freed from the fiscal discipline of having to meet the wage bill for all public and para-public employees if the spirit of the economic recovery plan imposed by the IMF is to be maintained.

E. Recommendations

This evaluation does not propose a definitive solution to the administrative and management problems of the Casamance Regional Development Project. These problems are clearly tied to the current legal status of SOMIVAC and PIDAC and this will have to be changed, perhaps by creating new legislation. The Director of SOMIVAC is aware of most of these problems and is better placed than the evaluation team to help identify feasible solutions. The following changes, however, appear to the evaluation team to be essential:

1) Should SOMIVAC remain as a regional development organization, the team recommends:

a) a change in its legal statute so as to permit a very large degree of administrative and management autonomy for its Director General.

b) delegation of much greater autonomy for program development, financial management,

and acquisition of inputs to the Director of PIDAC. The directorates of SOMIVAC headquarters should limit their responsibilities to planning, approval of work programs and large scale technical studies. This will require strengthening of PIDAC project management capabilities.

c) creation of a Planning and Programming Committee within SOMIVAC which should include all the technical, financial and administrative directors as well as the planning advisors, the advisor for internal management and the project directors. The purpose of this committee will be to identify promising investments and studies needing to be undertaken and to integrate and coordinate the work plans and actions of the various directorates, implementing agencies and projects so as to more fully exploit the linkages between them.

2. In addition, SOMIVAC, if it remains as a regional development organization, and PIDAC should:

a) institute systems of management by objectives in order to better define the work programs of each technical assistant and each Senegalese technician. They should also establish a personnel evaluation system based on achievement of those objectives.

b) provide all project technicians with adequate resources to achieve their objectives and establish a system of performance incentives that includes access to internal advancement and productivity bonuses.

3. PIDAC should create a project management committee consisting of the Director of PIDAC, the senior expatriate monitoring and management specialist attached to the proposed

PIDAC Monitoring and Liaison Unit, all division directors, the chief accountant and the USAID Project Manager to assist the Director of PIDAC to plan and coordinate project activities, identify problems of management and propose solutions.

4. USAID should strengthen its own administrative and accounting services so as to insure support for project financial accounting systems and more effective control over project expenditures.

XIV. EVALUATION DU RAPPORT HARZA

A. Section Agronomique

Le rapport Harza présente une étude bien détaillée de la Basse-Casamance. Il identifie et présente d'une manière systématique tous les problèmes (contraintes) qui pèsent sur le développement agricole de cette région. Dans son ensemble il présente toutes les alternatives possibles pour une amélioration de la condition actuelle.

Les reflexions sur les différentes alternatives sont bien pertinentes et méritent d'être prises en considérations. Ils regroupent judicieusement les modes de développement dans les groupes d'activités de développement associés en vertu de leur traitement commun des ressources de base. Ces modes de développement sont classifiées comme structuraux (techniques de protection anti-sel etc...) qui peuvent être classifiés comme modes qui augmentent les ressources de base ou qui améliorent les bases existantes, ou comme non-structuraux (service de vulgarisation etc...).

Un grand éventail d'alternatives est laissé au choix. Elles sont également classifiées comme structurelles ou non structurelles placées chacune dans un contexte de scénario normal ou de sècheresse.

Le rapport dégage six types bien distincts de ressources terre-eau et identifie chacune avec ses implications pour les activités de développement potentielles à savoir : les plateaux, hautes pentes des vallées, basses pentes des vallées, terres herbacées, sols de mangroves et estuaires. Les possibilités de développement sont également analysées pour les différents scénarios (normal ou de sècheresse).Ainsi les types de développement qui sont limités ou irréalisables pour des raisons techniques sont éliminés.

D'une manière générale, le rapport présente tous les aspects : tous les problèmes aussi bien dans leur simplicité que dans leur complexité, et, toutes les alternatives possibles pour résoudre ces problèmes.

Ce document est un mémento et même une encyclopédie agricole pour la Basse-Casamance. Il peut donc être exploité valablement aussi bien par la recherche agronomique que par la vulgarisation agricole.

3. Analyse Sociale

Le rapport présente un résumé intéressant des documents écrits sur les Diola. Les informations fournies sur l'historique de chaque groupe sont pertinentes. Il y a aussi une analyse générale des différentes ethnies dans leur relation avec les nouvelles techniques agricoles. L'information sur l'exode rural et ses effets sur les unités de production présente de son côté ses aspects fort utiles.

Cependant les rapports HARZA ne livrent pas une analyse suffisamment détaillée des incidences et des conditions de la vulgarisation du paquet technologique du PIDAC. Les nouvelles exigences en force de travail, la division du travail dans le procès de production, la question des possibilités de maintenir localement les nouvelles technologies ainsi que leurs incidences écologiques ne sont pas analysés.

D'une manière générale, le rapport ne présente pas une appréciation des effets du paquet technologique sur l'organisation des forces productives au niveau du village et au niveau des structures de coopération traditionnelles.

C. Economic Sections

In general, the Harza economic analysis of alternative agricultural production interventions in the lower Casamance reflects a basically sound methodological approach. However, the input-output assumptions used impart a very optimistic bias to the results obtained.

1. Methodology

The study evaluates the marginal costs and benefits of adopting each of several new technologies by using an assumed pre-adoption technology as a point of departure. Budgets for each technology are built up from technical input/output assumptions derived from experience elsewhere in Senegal and from other parts of the World. Inputs and outputs are shadow priced to reflect real opportunity costs to the economy. Each technology is assumed to achieve its full potential within three years of adoption. The resulting difference in net benefits is discounted over a 20 year horizon. The study uses both internal rate of return and net present value methods for measuring the benefits of the individual technological packages.

Aggregate demand projections assume low and high rates of growth in population and per capita incomes with constant relative prices. Supply projections assume farmers produce the most profitable crop subject to regional and national consumption requirements and prices available in those markets where surpluses must be sold. Adoption rates vary according to the technology and the amount of land suitable for it in the region.

The methodological review of the study would have been easier if the Harza report had provided greater detail on the procedures used and had worked through the complete

analysis for at least one technology in a methodology annex. The very high internal rates of return obtained for virtually all technological alternatives give rise immediately to concern that the methodology is faulty After considerable discussion with Harza researchers the source of the overly optimistic results was traced to unrealistic input/output assumptions under African conditions. There are, nonetheless, a few concerns that should be raised.

It is generally accepted that internal rates of return are not appropriate measures of the benefits of agricultural extension programs. Most of the costs and benefits of such programs, especially when they are on-going, accrue annually while investment costs, as such, are generally quite low. A small net negative benefit in the first one or two years followed by a surplus of benefits over costs in subsequent years can generate a very high internal rate of return even though the gross benefit/cost ratio is quite low. Gross benefit/cost ratios or net present values per dollar of investment would generally be more appropriate measures of the worth of extension projects in a capital scarce context.

The manner in which the budgets treat extension costs also presents a problem. Using actual cost data from PIDAC, the Harza team calculates the annual cost of the extension program and divides this by total cultivated area. The resulting average cost per hectare is then charged to the budget for each technology. To the extent that only one-half or one-third of cultivated land receives the complete benefit of the extension package, then the cost per hectare of the extension program would actually double or triple over that used in the budgets. Very optimistic vehicle depreciation and operating cost assumptions and low estimates for the cost of

office supplies also contribute to underestimating extension program costs. Marketing and Credit program costs are similarly underestimated but these are not even included in the individual budgets.

2. Technical Assumptions

Many technical input-output assumptions seem unduly optimistic. At 700 kilograms per hectare, the yield for unimproved rainfed rice under normal conditions is probably 15-20% too low. Labor requirements for rainfed crops seem high in relation to those for irrigated and flood plain crops. The reduction in labor requirements from animal traction presupposes adoption of a complete package even though evidence in both the project area and in other parts of Senegal indicate that many more farmers plow than weed with animal traction--this after over 15 years of concerted extension activity. The field capacities assumed for rototillers (24 hectares/year) seem especially optimistic, as does the area to be covered by the shallow wells (.9 to 1.5 hectares during the dry season).[1/] Costs for animal traction are also seriously underestimated. Operating costs for feed, non-fieldwork labor for caring for the animals and repairs have been neglected and would amount to more than ten times the 3500 F.CFA per year operating cost assumed in the study for a team of oxen.

3. Price Assumptions

Partly because of the very high level of world prices immediately preceeding the preparation of the study, the origin price for rice and the destination price for peanuts are both above probable long term ranges. On the other hand, adjusting the value of rice produced in the Casamance to reflect the proportion of brokens in relation to Thai 5% and 100% brokens is an excellent solution to the sticky problem of

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1/ Harza researchers insist test results confirm the capacity of the shallow wells if properly placed. Our own suspicion is that lower field capacities will prevail with the result that actual costs per acre will be at least twice those assumed in the Harza study.

valuing locally produced rice in a country which imports predominantly 100% brokens. This approach allows for the very sensible alternative of exporting higher quality Casamance rice while importing the cheaper 100% brokens as a means of increasing food self-reliance.

The study's approach of using the CAF cost of U.S. No. 2 Red Sorghum to value millet and sorghum is less imaginative. The poor substitutability of this commodity for local millet and sorghum varieties was clearly demonstrated during the drought when U.S. red sorghum sold in local markets at a substantial discount from local millet and sorghum varieties.

4. Conclusion

As the results of its own field surveys begin coming in, Harza has come to appreciate the unusually optimistic nature of some of the input/output assumptions underlying its analysis. However, much of the information it needs is not available from farmers in the project area. Part of it is available from a more careful review of experience to date in other parts of Senegal. Part of it, however, can only be obtained by field testing a significant number of prototype investments to see what kind of results one can reasonably expect under field conditions in the Lower Casamance. For this and similar ventures the project should have a small prototype testing fund against which Harza and PIDAC can draw necessary financing with nothing more than the approval of the AID project manager and the Director of PIDAC.

D. Recommendations

USAID should establish a prototype Testing Fund to facilitate field testing for prototypes of seemingly promising investments under actual field operating conditions. The approval of the Director of PIDAC and USAID Project Manager should be all that is required to draw against the fund.

XV. RECURRENT COSTS

A. Recurrent Costs in the First Four Years of the Casamance Project

The recurrent cost problem, as it is usually identified, exists because of insufficient provision for operation, maintenance, and replacement expenditures needed to keep a project functioning. Thus far in the Casamance Project this difficulty has not been encountered. In fact, the problem has been quite different -- the funds are available, but the project has been unable to spend them. The result, paradoxically, is the same -- things do not get done for lack of the most basic materials: paper for offices, gasoline for vehicles, notebooks for extension agents.

As of December 31, 1982, when the project was in its fourth fiscal year (of five originally planned), PIDAC had managed to spend only 17.5 per cent of its life-of-project operating budget (see Table XV-1). ISRA, by contrast, had disbursements equal to 61.4 per cent of its original allotment. The problems of administration and management that have contributed to the inadequate rate of current spending have been detailed elsewhere in this report. Here it should suffice to evoke the Byzantine procedure involved in competitive bidding for procurement of commodities through the central government: the number of levels at which delays can occur or where capricious refusals to permit the procurement process to advance are the initial reaction of the offices involved. For example, a call for bids for office supplies was made in June 1982 by SOMIVAC for 1982/83. The first shipment of office supplies arrived in Ziguinchor in early June 1983. Such a delay is scandalous.

Table XV-1: Casamance Project Budget and Expenditures as of December 31, 1982 (000 U.S. $)

Category	SOMIVAC/Siege			PIDAC[a]			ISRA			Health Surveillance		
	Orig. Project	Obli-gated	Dis-bursed	Orig. Project	Obli-gated	Dis-bursed	Orig. Project	Obli-gated	Dis-bursed	Orig. Project	Obli-gated	Dis-bursed
1. Technical Assistance	1,185	1,063	689	1,500	1,077	774	850	764	137[b]	0	0	0
2. Participant Training	525	388	262	485	416	355	260	55	39	0	0	0
3. Construction	1,165	100	33	1,200	88	14	518	0	0	0	0	0
4. Equipment	470	150	116	1,031	1,543	1,278	227	150	63	85	66	51
5. Small Projects	0	0	0	150	38	0	0	0	0	0	0	0
6. Operating Costs	0	2	2	3,857	1,378	675	255	205	157	71	76	19
7. Credit	0	0	0	1,250	63	0	0	0	0	0	0	0
8. Studies	6,000	3,179	1,520	0	0	0	0	0	0	60	0	0
9. Project Management	180	0	0	0	679	532	0	0	0	0	0	0
10. Contingencies	175	-	-	410	-	-	107	-	-	11	-	-
11. Inflation	250	-	-	1,217	-	-	138	-	-	48	-	-
Total	9,950	4,881	2,621	11,100	5,282	3,628	2,386	1,174	395[b]	275	141	70

a. Including the Health Services Component
b. Probably an error in the original table

SOURCE: Unofficial Data from the Service Financier of SOMIVAC

B. The Issues

1. Slow Implementation of the PIDAC Program

It is inexplicable that the principal reason for delay -- the administrative bottlenecks in procurement -- has not been corrected before now. It was the subject of one of the major recommendations of the 1981 evaluation team (i.e. the transformation of SOMIVAC into a "Societe Nationale"). USAID should take immediate action with the GOS and SOMIVAC to come up with a solution to this problem. Otherwise, we feel that there is little purpose in continuing to spend money on SOMIVAC/Siege or PIDAC.

The change in procurement procedures is a necessary, but probably insufficient step towards the release of the Casamance Project from its inertia. Positive incentives are needed to motivate workers toward higher productivity. Productivity bonuses are an acceptable institution for doing this in Senegal. The team urges SOMIVAC to begin such a program immediately with full USAID financing. Annex D contains details for this proposal.

2. Sharing the Recurrent Cost Burden -- How Long a Transition?

According to the Grant Agreement, the GOS was to contribute $10,805,000, or 31 per cent of the total spending on the project: $7,535,000 in the form of budget support for SOMIVAC, PIDAC, and ISRA, most of which was for the salaries of fonctionnaires (the remainder consisted of the value of subsidies on agricultural inputs, ONCAD capitalization, and -- curiously -- peasants' interest payments).

The Senegalese fiscal crisis of the 1980's has forced USAID and other donors to reduce their expectations of the country's ability to provide counterpart operation funds. As a result, USAID agreed to furnish $200,000 (60,700,000 francs) per year for FY 1982 and 1983 to cover the Senegalese share of PIDAC's operating budget. USAID did not plan to continue this extraordinary funding, and in fact expected that Senegal would begin

XVII. VALIDITY OF PROJECT PAPER OUTPUT PROJECTIONS

In virtually all categories of project outputs the project will fall far short of intended objectives. The only exceptions are participant training and the number of farm families working with PIDAC.

A. Agricultural Extension

The project paper envisioned 126 PIDAC extension agents working with 3000 farm families. The first evaluation team raised the target to 10,000 families. The actual number of households having a member working with one of PIDAC's extension agents in 1982/83 was 13,100. Given the expected incorporation of 11 MAC extension agents into PIDAC in 1983 a revised target of 15,000 families would be attainable by the end of the project under the current extension approach. This would yield an average of around 185 households per extension agent.

The DEEP evaluation study suggests the average household working with PIDAC sees an agent between four and five times per year. The original PP envisioned a more intensive contact between extension agents and farmers. This, no doubt, partly explains the meager results achieved by the Project in the area of agricultural production.

The evaluation team recommends that output targets be broadened to include the number of meetings with farmers, number of demonstrations held, number of farm visits and number of field visits. The reporting system should gather this information from the agents along with the number of farmers attending each meeting or demonstration. The monitoring unit should publish quarterly totals for each agent and verify the accuracy of the report. As a minimum target the project should set three meetings, two demonstrations, and four field visits per farm family working with PIDAC. This would generate about 240 farmer demonstration days, 360 farmer meeting days and 480 farm visit days per extension agent working with 120 farm households during a production season.

Beyond 1985, USAID should continue to provide sufficient operating budget support (all of it, if GOS finances remain as bleak) to ensure the successful pursuit of PIDAC Phase I activities. As measurable progress is made in meeting output goals, on one hand, and in improving the GOS fiscal situation on the other, the GOS should be made to increase its contribution to the operating budget so that it is able to assume all recurrent costs when aid ends. Also, insofar as peasants' incomes have been raised by actions taken on their behalf, their contribution to the project's costs should rise as well.[1/] See Annex E for suggestions on recovering some project costs from beneficiaries.

C. Recurrent Spending In The Future

1. Through Phase I. The current and planned activities of PIDAC and ISRA will, by USAID estimates require approximately $1.1 million per year of project funding in 1982/83, 1983/84, and 1984/85.[2/] To this should be added the estimated 61 million F.CFA ($200,000 when the amount was decided) that USAID has contributed in 1982/83 (and in 1981/82) to relieve the GOS of its counterpart responsibility.

It is already clear that PIDAC will not spend this much for operating costs in 1982/83. Unofficial estimates by the Service Financier of SOMIVAC indicate that by June 30 PIDAC will have spent about 275 million F.CFA, 77 per cent of its 358 million operating budget.[3/] As a point of comparison, PRS will have spent about 80 per cent of its current budget. SOMIVAC/Siege will somehow have managed to spend more than its budget (221 million F.CFA as compared to 213 million). This contrast in ability to spend surely has some explanation other than better management. What makes this result even more curious is that, for 1982/83, PIDAC's operating budget was fully

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1/ Currently they provide labor for construction of the water management projects. Paying interest on debt is not a contribution, as the PP implies.

2/ Of this, about $90,000 is for ISRA, the rest for PIDAC. Implementation Letter n°40 puts USAID's non-salary contribution to PIDAC at 104 million F.CFA, and salaries will add about 100 million more. This is quite a bit less than $1 million at the current exchange rate

3/ not including base salaries (salaires bruts) of fonctionnaires.

funded by USAID, and PRS's almost entirely by the GOS budget, whereas the Siege had not a single franc of earmarked funding.

It is likely that PIDAC, under SOMIVAC's guidance, will continue to underspend its life-of-project operating budget. The salaries will be paid, of course, but the consumables will continue to be delivered slowly, if at all, and the amount budgeted but not spent in the first four years of the project will not be spent in the final two. We therefore anticipate that at least $1.0 million of the $3.9 million in PIDAC life-of-project operating costs will remain unspent at the end of 1984/85. To this amount should be added the as-yet unallocated "contingencies" line item, having a value of $2 million in SOMIVAC's plan for reprogramming project funds (see Table F-1 in Annex 1) and $1.26 million in USAID's. Thus, at least $2½ to $3 million will not be disbursed during the life of the project even if all the anticipated investment, studies,[1/] participant training and technical assistance budgets are fully spent.

The $1 million per year allocated for PIDAC's recurrent costs for the last two years of the project and the $180,000 allocated for ISRA should be adequate to run the equipment, pay the employees and fulfill the goals of the project, except for those recommendations made by the evaluation team which will require additional expenditures. Annex D details the added costs of these recommendations, including a proposal to allocate funds (about $260,000[2/] over the three calendar years 1983, 1984 and 1985) to replace the equipment which is likely to become unrealiable within a short time after the end of Phase I of the project if not replaced before then. Table XV-2 summarizes these costs.

1/ In the new, sharply reduced budget line.

2/ Of which approximately $210,000 will be for SOMIVAC & PIDAC, and $50,000 for ISRA. We assume that ISRA will not continue to be funded after 1985.

TABLE XV-2: Projected Operating Costs for Currently Programmed Project Activities and Changes Recommended by the Evaluation Team, Mid 1983 to Mid 1985

Component	Amount by Executing Agency: PIDAC	SOMIVAC Headquarters	ISRA	Total Cost
Recommended Changes:				
1. Travel Allowances	$ 10,000	$ 0	$ 0	$ 10,000
2. Equipment replacement	182,000	28,000	50,000	260,000
3. Computer	35,000	45,000	0	80,000
4. Statistics	0	50,000	0	50,000
5. Productivity Bonus	50,000	40,000	0	90,000
6. PIDAC Monitoring & Liaison Unit	60,000	0	0	60,000
7. Prototype Testing Fund	100,000	0	0	100,000
8. SOMIVAC Operating Costs	0	300,000	0	300.000
9. PIDAC GOS Counterpart	400,000	0	0	400,000
Sub-total	$ 837,000	$463,000	$ 50,000	$1,350,000
Currently Programmed Activities	$2,000,000	$ -	$180,000	$2,180,000
TOTALS	$2,837,000	$463,000	$230,000	$3,530,000

The recommended changes, as substantial as they seem, will absorb only one-half of the amount likely to remain unspent at the end of the project. One should, of course, think of these suggestions as the team's recommendations to allocate part of the "contingencies".

2. After the Project Ends: 1985-90

In planning Phase II of the Casamance Project, care should be taken to ensure that the actions begun in Phase I are not ignored, that resources are not diverted away from them for Phase II activities. The following is a very crude set of estimates of the annual cost of perpetuating the Phase I project.

a. Personnel. PIDAC's entire labor force is financed either wholly (contract employees) or partly (fonctionnaires) by USAID in Phase I. This would likely continue in Phase II, although the goal should be to eliminate USAID payment of anyone's base salary by the end of Phase II. Nonetheless, we think that that approximately three quarters of the present annual costs will be needed after 1985. This would mean the earmarking of approximately 115 million F.CFA per year ($330,000 at 350 CFA/$).

b. Equipment Renewal. Renewal of Phase I equipment should follow the same guidelines as those proposed in Annex D for the 1983-85 period: vehicles should be replaced as needed and other equipment renewed out of a fund of arbitrary but sufficient scale. A line item of $100,000 per year in the Phase II budget should cover the needs of Phase I Equipment.

c. Amortization of Structures. Even though some structures will begin to deteriorate during this period, we do not consider the amount substantial enough to be a cause for concern until later years.

d. Other Recurrent Costs. These consist essentially of vehicle operation and maintenance expenditures and office and field supplies. These run (according to the PP) at a rate of about $180,000 per year during the current project; three quarters that will also probably maintain the operation of Phase I activities without too much pressure from additional phase II activities.

The total estimated annual recurrent costs of continuing activities from the existing project therefore amount to approximately $565,000. A five-year Phase II project should therefore set aside $3 million before adding new activities.

D. Conclusion

For most projects, the recurrent cost problem begins when the donor leaves. In the Casamance Project it began immediately. The inability to maintain a flow of operating expenditures has not been due to the absence of money but rather to administrative problems which have seriously impeded project execution. Unless these problems are resolved, we feel that there is no reason to continue the financing of PIDAC. If, on the other hand, USAID and the GOS succeed in finding ways to unfetter the work of integrated rural development in Senegal, we are confident that the project will be a success.

E. Recommendations

1. We recommend that USAID agree to make a long term commitment to support PIDAC. This should include a willingness to finance 100% of PIDAC's operating costs, excluding the base salaries of Civil Servants but including the GOS counterpart contribution, until such time as the GOS on the one hand and the paysants on the other have the capacity to assume this responsibility effectively. In return, the GOS must agree to much greater autonomy for PIDAC to manage its own funds and much greater USAID involvement in project management.

2. USAID should agree to contribute one fourth of SOMIVAC's operating budget in the form of non-salary operating costs if and when the GOS agrees to a legal status for SOMIVAC that confers on it sufficient financial and administrative autonomy to assure effective implementation of the lower Casamance Integrated Rural Development Project.

C. Agricultural Production

The original objective of exporting 20,000 tons of rice from the project area by 1990 is by now clearly an illusion. The Casamance will do well to attain self sufficiency in rice by then. The recent ISRA farming systems study suggests that farmers now produce less than 40% of their household consumption of rice. According to several observers farmers are shifting increasingly away from rice to dryland cereals in order to cope with chronically lower rainfall, though the MDR production statistics in Table II-1 do not support this point of view, at least over the past seven years. There has, however, been a marked increase in maize production, mostly at the expense of millet and sorghum, and increasing attention to dryland cereals production by PIDAC. In 1979, for example, over 50% of cror area followed by PIDAC was in rice. By 1982/83 this proportion had declined to around one quarter. More than anything this represents more complete reporting by PIDAC extension agents of just what farmers have been doing all along.[1/]

Combining the shifting emphasis on dryland crops by PIDAC, the increase in the number of extension agents expected when MAC agents are absorbed into the project, and a more intensive involvement with a smaller number of farm families by each agent, the following outputs appear to be more reasonable targets than those in the original P.P.

1/ Even with this improved reporting of land under production by PIDAC farmers, we estimate, based on the number of households working with PIDAC and the total area in production in Table II-1, that PIDAC extension agents are still only recording about 60% of the actual area being activitated by the households of farmers who are encadre by PIDAC.

With the incorporation of the MAC extension agents and no hiring of new agents until those already in place show acceptable results, the end-of-project output targets should be revised accordingly, i.e., 10,000 farm families working with PIDAC, 30,000 farmer meeting days, 20,000 farm demonstration days and 40,000 farm visits per year.

The target of 80% of extension agents passing a competency exam on extension themes is still a valid objective but the project will need to overcome its administrative problems before the training program can hope to achieve it.

B. Agricultural Inputs

The project paper envisioned the project supplying 5000 tons of fertilizer to project farmers. PIDAC expects to distribute around 800 tons of fertilizer during the 1983 season and will have a difficult time sustaining this level of use if fertilizer prices double by 1985 as expected with the removal of subsidies.

The P.P. also expected the credit program to be distributing 300 million F.CFA in medium term credit to 2000 farmers in order to supplement regular GOS short term and medium term credit programs. The revised target of 1500 farmers set by the first evaluation team still seems like a more reasonable figure and 160 million F.CFA is the maximum amount of outstanding short and medium term credit desirable given the late start of the program. Even this amount will require a doubling of the amount of credit disbursed each year until the end of the first phase. Quicker expansion than this would be unwise.

There is still a good chance of attaining the original target of producing 50 tons per year of improved rice and maize seed on the PIDAC seed farm though, clearly, the seed production program will have to be strengthened to achieve it.

to contribute an even greater share of operating costs in the last two years of the project than had originally been planned. Since Senegal's financial difficulties continue, however, it is highly uncertain that the GOS will be able to come up with the counterpart to which it had agreed in 1978, much less increase its share (in fact, the GOS 1983/84 budget has earmarked 151 million francs for PIDAC, 80 million less than in 1982/83.

We feel that now is not the time to insist that the GOS raise its contribution to recurrent costs. The chances are small that it will in fact come up with the money when called for, and the continued underspending of U.S. funds (due in part to the rise in the exchange rate) suggests that there is much less of a financial crunch in the project than at the central government level. To rely on the GOS to finance more of the operating budget is to increase the probability that project funds will be insufficient for project needs. There are enough constraints on implementation already without adding another.

The team therefore recommends that, for the last two years of the project and on into the indefinite future USAID:

1) finance one hundred per cent of PIDAC's operating budget; 1/

2) continue to pay the Senegalese counterpart in the PIDAC budget;

3) contribute one-fourth of SOMIVAC/Siege's operating budget as well.

The justification for recommendation number 3 is given in Annex D. The conditions to be satisfied before any of these recommendations should be carried out are:

1) much greater financial and administrative independence for SOMIVAC;

2) administrative and financial autonomy of PIDAC;

3) increased USAID responsibility for ensuring prompt action and accurate reporting on spending.

1/ Here, by "operating budget" we mean all current expenditures, other than base salaries (salaries bruts) of fonctionnaires.

Table XVII: Original and Revised Output Projections for Total Area and Average Yields of Cereals Produced by PIDAC Farmers

Crop	Original Project Paper		Evaluation Team Revision	
	Area (Ha)	Yield (Tons/ha)	Area (Ha)	Yield (Tons/ha)
Rice	10,000	2-2.5	4,000	1.5
Millet/Sorghum	1,800	1.0	2,800	1.0
Maize	850	2.0	3,600	1.5
Peanuts	2,900	1.2	5,600	1.2
TOTALS	15,500		16,000	

The total area of the two sets of projections is not that different and both are very similar to actual 1982/83 results (16,000 ha). The revised yield projections are considerably lower for rice and maize, the two crops with which PIDAC works most closely but they are well above actual 1982/83 results. Even these lower targets will not be achieved unless PIDAC extension agents begin working more intensively with farmers.

D. Literacy and Training

The delay in getting literacy training moving and the lack of a substantial impact from the work done thus far suggest that the original output projections be revised downward. The project can now expect to field 24 rather than 36 agents and to enroll 2400 rather than 3000 villagers. This will be no where close to the kind of program needed to raise the level of literacy in local languages in 100 villages to 40% as projected in the P.P. A level of 10% in 50 villages is the best that can be hoped for and even this will require a major reinvigoration of the current program. The literacy program will also have to step up its materials preparation activities if it hopes to provide the 10 technical items in the vernacular envisioned in the P.P.

With respect to external training and a functioning documentation center, these objectives have essentially already been achieved. In-service training of extension agents is lagging badly and will continue to do so unless PIDAC's financial management practices improve. The number of training sessions per year envisioned in the P.P. is still reasonable and should be maintained.

E. Research

The target of five new varieties of rice and other food grains identified and tested by ISRA seems likely to be realized, though diffusion will not be possible until a second phase gets underway. Links between ISRA and PIDAC still are weak but creation of a Monitoring and Liaison Unit at PIDAC and altering the composition of the ISRA/SOMIVAC Research and Development Committee as suggested in this report should allow those objectives to be accomplished within the time remaining in the project.

F. Planning and Coordination at SOMIVAC

Preparation of the Master Plan appears to be on target and it should be possible to complete the final design of three projects as anticipated. SOMIVAC expertise for project planning and coordination is still very weak but has received a major shot in the arm with the arrival of the most recent Director General of SOMIVAC. If the evaluation team's recommendations relating to strengthening management and reinforcing DEEP are implemented, donors may indeed be able to rely on SOMIVAC for expertise in project planning and coordination by the end of the first phase in 1985.

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ANNEX A: Derivation Of The Estimated Impact Of The Project On Agricultural Production To Date Using The Component Method

To get good data for using the component approach to estimating the impact of the project on agricultural production one needs to divide farmers into two groups: those villages directly influenced by the project and those in villages not influenced by it. Farmers in each group would then be divided into those who are effectively encadré and those who are not. Ideally, one would measure the area on which the practice is used for each group during some base year and then again during the year in which the evaluation is being conducted. The recent DEEP evaluation survey could not do this because of its late start.

A second best approach would be to stratify villages and farmers into the same groups at a given point in time. The difference between these will provide suggestions of the magnitude of the impact of the project but will require interpretation concerning the relative point of departure for the four groups. A survey of the same group at a later data will give a good indication of the speed of change in each group and will improve the ability to correctly interpret the data obtained from the first survey.

A third best approach, one that will have to be used by DEEP, is to stratify the villages already sampled into the relevant groups and tabulate the practice data separately. Unfortunately the extensive survey includes no information on the area on which the improved techniques are practiced for each household, so even this division will get at only some of the information needed for the analysis. The rest will have to be obtained from future surveys.

The available DEEP data, though preliminary and subject to change, is still useful. It must, however, be supplemented with a large number of assumptions concerning the extent of coverage and the effect of certain cultural practices. This appendix reviews those data and goes on to analysize the impact of the project on cereal production using the component approach.

1. The DEEP study shows that 16% of the exploitations in the project area have animal traction plows. PIDAC, under the USAID project, has distributed very little animal traction equipment. This figure gives an indication of the level of development of the peasants before the project began.

2. The study confirms that PIDAC worked directly with about 40% of all households in 1982/83. Another 15% or so witnessed a demonstration of one sort or another while 45% of all households had no contact at all with PIDAC agents.

3. Using these three groups to classify farmers, the proportion of seed that was improved was as follows:

TABLE A-1: Improved Seed As A Percent Of Total Seed Used By Three Groups Of Farmers During The 1982/83 Crop Season

Group Type/ Contact with PIDAC	Percent of Households	Percent of Seed Used Which is Improved: Rainfed Rice	Aquatic Rice	Maize	Peanuts
Meeting or visit	38	76	21	64	59
Demonstration only	18	64	64	34	46
No contact	44	23	4	34	46
All farmers	100	44	16	60	51

Using the "no contact" group as the without project measure[1/] and the number of households in each group, we estimate that about 26% of the total area in maize, 21% of the area in rainfed rice, 12% of the area in aquatic rice and 3% of the area in peanuts are planted to improved seeds made available by the project, either directly or indirectly. Another 34%, 23%, 4% and 49% of maize, rainfed rice, aquatic rice and peanut area, respectively, now planted to improve varieties either existed prior to the project or resulted from forces outside this project.[2/]

1/ This assumes that any trickle down effect of improved seeds to "non-encadré" farmers is offset by the upward bias caused by the fact that PIDAC began working with those villages who had the greatest amount of pre-project extension support and, as a result, the highest level of use of improved inputs and practices.

2/ The case of peanuts requires explanation. Since the project distributed no peanut seed the large proportion of improved seed gives some indication of the acceptance of improved seed prior to the project by both groups. Improved seed have existed for decades in Senegal and it is unlikely there has been a sharp increase in recent years. To the extent this is true, the same data give an indication of the extent to which PIDAC is working with inherently more progressive farmers who adopt new practices more quickly on their own. However, it is also possible that this difference reflects the effect of PIDAC extension support since PIDAC does advise farmers on improved cultural techniques for peanuts. Probably both are true. In our analysis we split the difference and assume that 3% of the 6% increase in area planted to improved peanut seed over and above the no-contact base is due to the actions of the project. The other 3% is allocated to the no-contact alternative.

4. The proportion of fertilizer use by crop is roughly 70% on rice and 10% on maize, peanuts and millet/sorghum respectively. "Encadré" farmers appear to use about twice as much as "non-encadré" farmers. Without the project no fertilizer would be available.

5. The use of insecticides and pesticides by farmers is very low, under 5%. Even then, they are used only on a portion of a farmers fields.

6. The percentage of farmers using manure on rainfed crops is small. The percentage using manure on aquatic rice is much higher but is only half as high among "encadré" farmers as among those having no contact with the extension service.

7. The frequency of weeding and the incidence of thinning is low and of equal occurence between the three groups. It is doubtful the project has had any impact in these areas.

8. The use of flat plowing for aquatic rice and maize is low with no noticable difference between the groups. For rainfed rice it is high, with about 65% of the "encadré" group versus 35% for "non-encadré" group adopting the practice.

9. Early planting results in increased yields of 45% for aquatic rice and 20-30% for rainfed rice using binomial analytical techniques. A properly specified multiple regression model would reveal the effects to be considerably lower. For maize a three variable multiple regression model suggests a 25% increase in yields. This also would probably be lower in a more completely specified model. Early seeding appears to increase yields of peanuts by about 15% but the data are sketchy.

10. The limited data available suggest that 47% of aquatic rice, 21% of rainfed rice, 35% of maize and less than 5% of peanut area is planted early. Given the nature of the sample, the aquatic rice and maize figures seem over estimated.

As one looks at these results it appears that the principle benefits of the project to date, i.e. benefits that would not have accured in its absence, arise primarily from the greater use and availability of improved seed, the availability of fertilizer, flat plowing for rainfed rice and, most likely, early planting. Using the 1976-82 average yield and 1981-82 average area as a base we estimate the increase in production arising from the various sources as detailed in Table A-2.

The overall increase in production explained by non-population and unusual short-term adjustment factors is about 7,100 tons of cereals based on these data and assumptions. This amount to 95% of the base production or about 90% of the amount remaining to be explained after allowing for the 2 1/2% decline in area cultivated. The remaining 10% probably arises from other factors such as increased use of manure as fertilizer prices have risen, SONAR distribution of fertilizer for peanuts, overlooked variables and/or measurement error.

Assuming that 20% of the production on the 3,000 hectare increase in maize production since 1979 represents a net increase over and above the lost output of the crops it replaced,and assuming further that 1/2 of this substitution is due to the project,the results suggest that the project may have boosted cereals production by around 4,100 tons. The remaining 4,000 tons of increased production appears to have resulted from actions taken prior to the project starting date, subsequent to it by other agencies and services, or spontaneously by farmers.

These data are very tenuous to say the least. The design of the evaluation sample does not permit a very clear picture to be drawn of the non-project scenario. The as yet incomplete analysis of the data gives only snapshot indications of the effect of certain practices on yields. Finally, the coefficients that measure the impact of key varieties almost certainly will change considerably when the data are placed in a more structurally complete model. Still, they are all we have. In the aggregate, the results of the analysis appear resonable as a maximum estimate of the impact of the project over each of the past two years.

TABLE A-2: Estimated Increases in Agricultural Production in the Lower Casamance Arising From the Projet Using the Component Method.

(Tons)

Crop	Base a/ Area (ha)	Base b/ Yield (kg)	Source of seed	Increase in Production: With project	Without project	Net increase
Rainfed Rice	9,100	990	Improved seed c/	590	310	280
			Fertilizer d/	400	-	400
			Early planting e/	360	180	180
			Flat plowing f/	450	320	130
				1,800	810	990
Aquatic Rice	18,100	1,190	Improved seed c/	390	130	260
			Fertilizer d/	820	-	820
			Early planting e/	1,720	860	860
				2,930	990	1,940
Maize	6,000	810	Improved seed c/	440	250	190
			Fertilizer d/	170	-	170
			Early planting e/	290	150	140
				900	400	500
Peanuts	22,500	980	Improved seed c/	1,150	1,080	70
			Fertilizer d/	130	-	130
			Early planting e/	170	90	80
				1,450	1,170	280
Sorghum/ Millet	18,800	710	Fertilizer	130	-	130
Totals	74,500	950		7,080	3,370	3,840

Footnotes to TABLE A-2:

a/ 1981/82 average taken from Table II-1. Rice is assumed to be 2/3 rainfed and 1/3 aquatic.

b/ 1976-82 average taken from Table II-1. Aquatic rice is assumed to yield 200 Kgs/Ha more than rainfed rice in a year of average (7 years) rainfall.

c/ Assuming a 15% increase in yield due to variety alone for all crops except peanuts. We assume 10% for peanuts because of the long history of peanut research and availability of improved varieties.

d/ Assuming average fertilizer applications of 435 tons per year over the last two years based on PIDAC actual distributions. Fertilizer is assumed to be applied 70% on rice and 10% on maize, sorghum/millet and peanut respectively. The yield effect of fertilizer is assumed to be four kilos of paddy and maize and three kilos of sorghum/millet and peanuts per kilo of high analysis fertilizer (50% active ingredients) under farm conditions similar to 1981-82.

e/ Assuming that 20% of rainfed rice, 40% of aquatic rice, 30% of maize and 5% of peanut area is planted early and the without project scenario equals half of that. Yields are assumed to increase 20% for rice and maize and 15% for peanuts.

f/ Assuming 50% of all farmers use flat plowing with 35% using it under the non-project scenario. Flat plowing is assumed to increase yields 10%.

ANNEXE B: Exemple de Rapport Entre le Volet Féminin et les Autres Divisions et Sections du Projet

Tâches du Volet Féminin	Divisions ou Sections
- Aider les femmes à assimiler les thèmes de vulgarisations et de résoudre les problèmes agricoles.	Agro-Vulgarisation
- Assurer que les femmes ne sont pas laisées dans la distribution des semences, l'achat des engrais,	
- Prendre garde à faire des animatrices du volet des vulgarisatrices.	
Signaler les besoins de formation:	Formation
- Femmes à alphabétiser, centre à créer, matériel nécessaire.	
- Identifier les domaines sur lesquels il faut mettre l'accent.	
Collaborer avec le Chef de Division Formation pour	
- Voir les cours en commun (jeunes, adultes et vieillard posant les mêmes problèmes).	
- Organiser les femmes en groupes d'action	
Recenser les villages où il faut forer des puits	Génie Rural
- Recenser les puits à réparer.	
- Mobiliser les femmes pour qu'elles puissent apporter le soutien au Génie Rural.	
- Transmettre conseil du GR pour l'entretien des puits, etc..	
- Détecter les problèmes qui se posent aux femmes pour leurs animaux (maladies, nourriture).	Santé: Production Animale
- Demander un suivi des actions du volet et des évaluations périodiques.	Evaluations

ANNEX C: Les Rapports Entres Gestion, Suivi et Evaluation pour la SOMIVAC et Le PIDAC

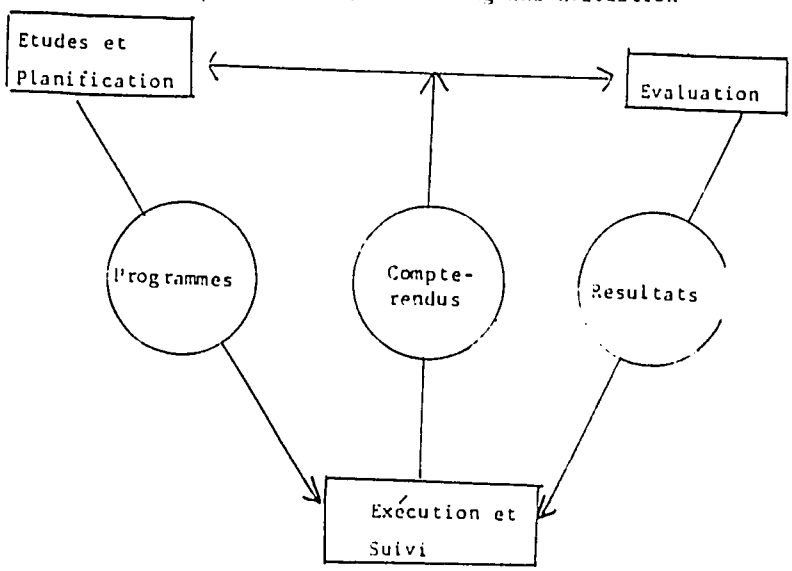
On peut dire, en simplifiant, que le suivi s'applique aux actions menées et l'évaluation tente de measurer les résultats obtenus. Dans une démarche correcte de management l'unité chargée des études et de la planification dégage les objectifs à atteindre pour la période du plan, programme les grandes lignes des actions à mener, et met en place les instruments d'évaluation. Les unités techniques d'exploitation détaillent à leur niveau les programmes indicatifs, en fixant un calendrier prévisionnel d'exécution, ainsi que les objectifs intermédiaires. Ils prévoient aussi les moyens nécessaires (financiers, materiels, humains) a l'exécution de ces programmes en essayant d'optimiser ces moyens par une rationalisation des choix budgétaires. Ensuite, la "Direction" opère des arbitrages budgétaires, en fonction des objectifs et des moyens globaux disponibles et arrête les programmes définitifs à réaliser.

Sur le coté d'exécution des programmes et en fonction de ces décisions, les unités techniques d'exploitation fixent pour la période concernée, les objectifs, les programmes et le calendrier d'exécution. Ils mettent en place les reseaux de communication ou "feed-back" et les instruments de contrôle périodique (les clignotants), afin de pouvoir mesurer les écarts par rapport aux prévisions et de savoir les raisons pour ceux-ci. Dans cette maniere ils exercent le suivi des réalisations, afin de pouvoir prendre les mesures de redressement dans le cas de la constation de ces écarts. Ils rendent compte périodiquement de la situation à la Direction et à l'unité chargée des études et de la planification.

L'evaluation enregistre les résultats intermédiaires et le résultat final et évalue ce résultat obtenu, en comparant les objectifs atteints aux objectifs prévus. Comme le suivi le but de l'évaluation est de régler le systeme. Mais le point de vue est beaucoup plus long terme and orienté vers l'amelioration de la programmation des activites et des projets suivantes plûtot que vers les actions encours.

Schématiquement on peut depeindre le processus comme le suivant:

DIAGRAM C-1: Theoretical Rapport Between Planning, Implementation, Monitoring and Evaluation

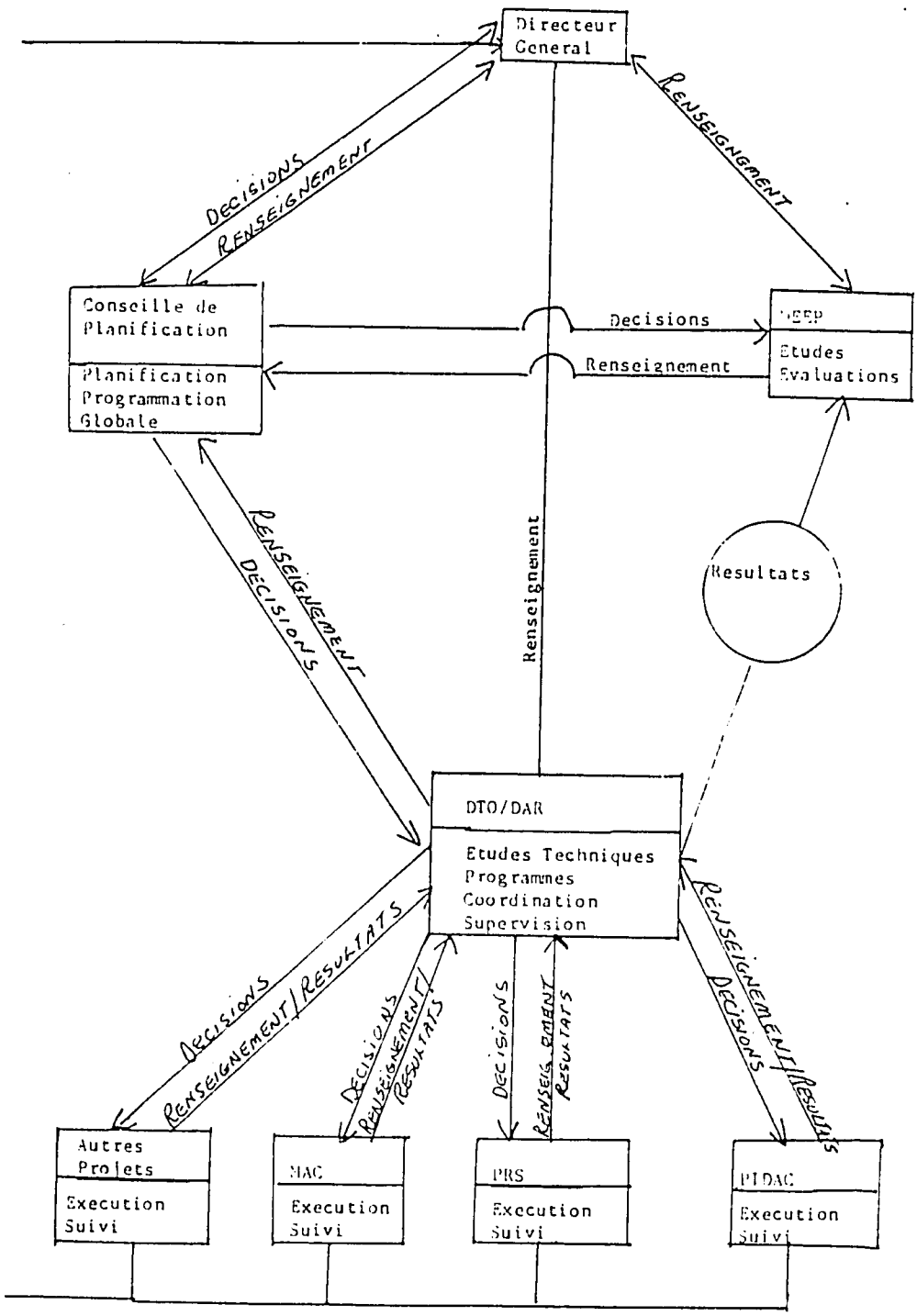


A la SOMIVAC, cette démarche se complique par le fait qu'il ne s'agit pas seulement de mesurer, quantitativement et qualitativement, une production materiélle donée sur une petite période, mais aussi un impact à long terme sur une modification progressive et profonde d'un milieu. Dans le forme ils se complique par l'existence simultanée des unités techniques au niveau du Siège (DAR, DTO) et au niveau des projets (par exemple, au PIDAC, les Divisions Génie Rurale et Agro-Vulgarisation). Il y a la une duplication qui peut être nuisible à l'efficacité du système, par le ralentissement des informations et le manque de souplesse dans l'exécution (peut-etre aussi par une dilution des responsabilités).

Reconnaissant cependant la nécessité d'une coordination centrale des activites et d'une supervision permanente des opérations, nous préconisons que les directions technique centrales (pour toutes les opérations) soient chargée avec un personnel réduit, mais très compétent, des études techniques d'une certaine ampleur et de leur faisabilité de la coordination des programmes d'exécution; et de la supervision du suivi des opérations. Les Services Techniques spécialisés par projet devraient etre chargés de la preparation et l'exécution des programmes, le suivi des actions en cours et les compte-rendus périodiques.

Le schema deviendrait alors, a la SOMIVAC, le suivant:

Diagram C-2: Rapport Between Planning, Execution, Monitoring and Implementation at SOMIVAC/PIDAC



ANNEX D: Estimated Cost of Recommended Changes in the Casamance Regional Development Project

1. Travel Allowances:

The chefs de zone and intendants de zone suggested that their travel allowance of 15,000 F.CFA per month to cover gasoline and repairs for their motorcycles is insufficient. They argue that they have a larger area to cover than the extension agents and should have a larger allowance. We agree and suggest that the zone officials be given an additional 5,000 F.CFA per month. This will enable them to purchase about 18 more liters of gasoline per month substantially increasing their mobility. We further suggest that the extension service conduct a study of the number of kilometers per month agents travel in their work using actual origins and destinations of work related travel. If this figure times the per - km cost of gas exceeds the allowance (less, say, 8000 F.CFA for repairs), then the allowance should be raised further. We do not think it will. The total cost of this suggestion would be around $5,000 per year.[1/]

2. Equipment Replacement

a. Vehicles. Budgeting should be done now for the vehicles that will be fully amortized before the project is over. The table on the following page shows the distribution of vehicles needing renewal by year and agency, along with estimated costs of procurement. The cost of this recommendation would be $210,000 through 1985.

1/ Assuming 350 F.CFA/$US.

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Table D-1: Project Vehicles Needing Replacement By Year and Agency

Calendar Year	Agency: SOMIVAC Headquarters	PIDAC	ISRA	Liaison Office
1983	-	3 pickups (21)[a]	1 truck (9)	-
	-	1 Sedan (6)	1 Sedan (5)	
1984	1 4WD (15)	1 4WD (15)	1 Sedan (5)	
	1 St. wagon (8)			
1985	1 Sedan (5)	3 trucks (60)	1 pickup(8)	1 pickup
		1 Sedan (5)	1 van (7)	
		1 St.wagon(8)		
		3 pickups (24)		

a/ Figures in parentheses are the estimated cost in thousands of $.US.

b. Other Equipment

The variety of equipment provided the project is enormous, and it depreciates at widely different rates. It is, in general, longer-lived than the vehicles, with an average life of six to ten years. To provide for replacement of non-vehicle equipment until the end of the project we propose that a fund, under the absolute control of the USAID project manager, be earmarked for replacing worn-out equipment. A very rough guess as to the size of the fund is $50,000. $35,000 or so should go to PIDAC, $15,000 to ISRA.

3. Computers for DEEP and the Financial Services

The computers currently installed at DEEP are inadequate for the purpose for which they were intended: analysis of the large data sets that the various surveys and studies of DEEP have generated (See Section X). If they are replaced by IBM or Apple personal computers the total cost would be about $12,500 (U.S. retail) including software.

The Radio Shack computers are likely to be much more appropriate for the purpose of helping SOMIVAC and PIDAC in their efforts to get

their accounting, financial planning and monitoring activities under control. Additional software for this would probably run around $1,000. Facilities, staff, and four months of related technical assistance would raise the total cost of this recommentation to around $80,000.

Some training would be needed, both to convert the operators of DEEP's computer center to the new computers and to introduce the accounting and monitoring unit's staff to the Radio Shacks. The Ecole Supérieure de Gestion de l'Enterprise should be able to handle both tasks. There should be funds available in the Participant Training line to cover these expenses.

4. Permanent Data - Gathering System

In Chapter X we recommend that DEEP be given the resources to establish a system to maintain the flow of reliable statistics on the rural section in Casamance. Details and justifications are found there. The total cost of this recommendation will be around $25,000 per year.

5. Productivity Bonuses

No more than one-third of the employees in a cost center should benefit from these bonuses in any year; if more do, the bonus will rapidly become another normal, expected addition to the salary rather than a reward for special productivity. It goes without saying that the criteria for awarding the primes should be well understood both by those eligible for them (everyone) and those responsible for awarding them.[1/]

The amount should be quite generous--perhaps a maximum of one month's salary awarded in half-year rounds; there is no reason why the same person could not get the bonus twice a year. Government guidelines permit a maximum of 7 per cent of the

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1/ Each level in the administrative hierarchy should meet and allocate the bonuses to the level of employees immediately below them. The Director of PIDAC would have to give final approval for bonuses awarded to his personnel and the Director General of SOMIVAC would have final approval for those awarded to project directors or SOMIVAC headquarters' staff. The percentage eligible for the awards should be the same within each level of the hierarchy.

wage bill to be used for bonuses with no specification of how it is to be distributed. Assuming that the average monthly gross salary at PIDAC is 75,000 F.CFA (we could not obtain this information precisely, but the true figure is surely not far from this), the fund needed for the approximately 170 PIDAC employees would be 8.5 million F.CFA. Extending this to SOMIVAC's 125 employees (whose average salary is surely higher because it has no field workers) would add around another 7.5 million F.CFA. The total cost of this recommendation will be around $45,000 per year.

6. PIDAC Monitoring and Liaison Unit

The senior monitoring/management specialist to be assigned to the proposed PIDAC Monitoring and Liaison Unit will replace the departing seed production specialist so there will be no net increase in technical assistance costs for the PIDAC component. The unit will, however, need a staff, a vehicle and funds for carrying out limited, well targeted formal and informal surveys. It will need to hire a programmer to enter and routinely tabulate data from the monitoring systems put in place so as to provide the Director of PIDAC with prompt and regular feedback on the performance of key project components. Given the time required to recruit a new specialist, we estimate that $50,000 should cover the added costs caused by the unit over a 1½ year period to the end of Phase I of the project.

7. Prototype Testing Fund

This component will facilitate the testing of promising prototype investments under actual field operating conditions in order to simulate as much as possible likely implementation problems related to specific technologies. HARZA already has limited financing to do this but the scale permitted by that source is not sufficient to replicate field operating conditions. This component will provide $100,000 over the remainder of the project for such purposes.

8. SOMIVAC Operating Costs

USAID has hitherto avoided direct funding of the operating budget of SOMIVAC headquarters. One justification for beginning to do so is to induce SOMIVAC and the GOS to go ahead with the administrative reforms necessary to overcome critical implementation problems. Another, of course, is that the project does make demands on SOMIVAC headquarters in terms of counterparts, support staff, etc., that SOMIVAC would not have to provide in the absence of the project.

We believe that for the regional development agencies in general, and SOMIVAC in particular, to have a chance of contributing to the success of projects under their jurisdiction, donors either must share in the costs of running the agency or work to abolish it. Since any major change regarding SOMIVAC will most likely not come until a possible second phase, we have budgeted for the former. This may help SOMIVAC in its quest for autonomy, and help it to attract and hold competent and motivated technical and administrative staff. USAID may, however, wait to withhold making this contribution until substantial administrative reform is imminent.

We therefore suggest that USAID contribute to SOMIVAC headquarters an amount equal to one-fourth of its operating budget to be used only for non-salary operating costs. This would amount to 54 million F.CFA or about $150,000 per year based on the 1982/83 operating budget for SOMIVAC headquarters.

9. Continuation of USAID Payment of GOS Counterpart Contribution

For reasons given in Section XIV. B of the report, we recommend that the US continue to relieve the GOS of its obligation to contribute 61 million francs per year to PIDAC's operating budget until the end of the project. This would add about $200,000 per year to operating costs to be financed by USAID.

ANNEX E: Ways to Raise Peasants' Share of Recurrent Cost Financing

The project has been implemented too slowly to envision a set of charges for services rendered by the project in the next two years. The Phase II design should, however, envision that some of the services for which benefits accrue to easily identified individuals should be paid for by the beneficiaries themselves. Some examples follow.

Improved seeds should be sold to users at a price substantially higher than the seed available off-project to make a contribution toward the cost of running the seed farm. The demand for good seed is probably fairly price-inelastic now that its success has been demonstrated for rice and corn. This would also ensure that improved seeds do not get consumed.

Credit for machinery and current inputs should be a self-sustaining operation. Agricultural implements are now subsidized, relative to other regions, because they are sold to peasants at PIDAC cost, which is duty-free, exluding transport costs. This policy should be progressively reversed. At the same time, the interest rate should be at least as high as that available from the regular government credit program. The equipment and interest rate charges combined should be high enough to make the Credit Fund self-sustaining, including administration costs incurred by the Intendance et Cooperation Section as well as inflation and loan losses.

Health Services should have part or all of their operating budget financed by modest contributions by the affected population, as the PP seems to suggest. The key to self-financing of this kind of activity is to minimize permanent centralized staffing. The village PPNS, pharmacies, etc., will have difficulty in sustaining themselves, let alone a regional administration.

ANNEX F: Comments on SOMIVAC's Proposal on the Reprogramming of Project Funds

On the basis of the data in Table F-1 SOMIVAC argues that the project should be given more money than the original $23.71 million because ISRA will exceed its original budget, while PIDAC and SOMIVAC Siege will remain within theirs. Certainly it is true that ISRA's budget rises in the proposed reallocation as a result of increases in technical assistance and operating costs, but the same is true of PIDAC. Moreover, SOMIVAC/Siege's technical assistance budget rises by more than either of the other agencies'. PIDAC will stay within its budget by reducing construction expenditures (by doing the work itself) by an amount just about equal to the increase in Technical Assistance. SOMIVAC headquarters manages to increase technical assistance and participant training by utilizing the reduced budget allocation for studies.

As the agency charged with the execution of the studies, SOMIVAC claims that the savings of $2.375 million should be allocated to it. The team rejects this argument and suggests that the funds be considered fungible. It should be noted that the Project Paper did not include the studies in the SOMIVAC budget line item so SOMIVAC's claim to the unspent money is scarcely supported. There may be good reason to support the activities of the SOMIVAC headquarters but USAID should fund only those well-defined activities which help the project progress towards its objectives.

In fact, several items in the project budget should not be allocated among the various agencies at all, notably project management, contingencies and inflation allowances. Even the large Harza portion of the Studies line item ($3 million) is not truly under SOMIVAC's control in a meaningful sense, because Harza is an independent contractor. Perhaps a new column entitled "unallocated" or "joint budget" would be an appropriate way to handle these funds, about whose utilization USAID should be able to take the initiative.

TABLE F-1: SOMIVAC'S Proposal For Rearranging The Allocation of External Financing for the Lower Casamance Rural Development Project; May, 1983 to June, 1985

($1,000)

CATEGORY	SOMIVAC/ Headquarters		PIDAC 1/		I S R A		Health Surveillance		TOTAL	
	Programmed 2/	Revised 3/	Programmed	Revised	Programmed	Revised	Programmed	Revised	Programmed	Revised
1. Assistance										
- long term	720	1,974	1,035	1,900	600		-	-		
- short term	465	200	465	200	280		-	-		
- sub-total	1,185	2,174	1,500	2,100	880	1,400	-	-	3,565	5,674
2. Training										
- long term	421	545	276	280	140		-	-		
- short term	104	300	209	120	120		-	-		
- sub total	525	845	485	400	260	270	-	-	1,270	1,515
3. Construction	1,165	1,105	1,200	605	518	518	-	-	2,883	2,228
4. Equipment	470	396	1,031	1,000	227	190	85	68	1,813	1,654
5. Small Projects	-	80	150	273	-	-	-	-	150	353
6. Operating and Investment Budget	-	2	3,857	4,087	255	500	71	-	4,183	4,589
7. Credit	-	-	1,250	1,250	-	-	-	-	1,250	1,250
8. Studies	6,000	3,625	-	-	-	-	60	75	6,060	3,700
9. Management	180	559	-	623	-	134	-	16	180	1,332
10. Contingencies	175	1,164	410	762	107	-	11	116	703	2,042
11. Inflation	250	-	1,217	-	138		48		1,653	
GRANT TOTAL	9,950	9,950	11,100	11,100	2,385	3,012	275	275	23,710	24,337

1/ The budget for PIDAC includes financing for the rural health component amounting to $1,021,000 of which $152,000 is for technical assistance for the preparation of the project and $869,000 for the component itself.

2/ Programmed in the grant agreement of August 29, 1978

3/ Total expenditures including revisions up to June 30, 1985.

SOURCE: SOMIVAC Planning Advisor

Annex G: Partial List of Persons Contacted

SOMIVAC:

Mr. Bacary Coly, Director General
Mr. Simon Badji, General Secretary
Mr. Adama Tounkara, Planning Advisor
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Mr. Mamadou Touré, Agent Comptable Particulier (ACP)
Mr. Moussa Diaw, Chief of Administrative and Financial Services
Mr. Nassardine Aidara, Director of the Division of Rural Structures (DAR)
Mr. Moustapha Sarr, Director of the Division of Studies, Evaluation and Planning (DEEP)
Mr. Moustapha Bodian, Director of the Division of Technical Operations
Mr. Badji, Motor Pool Coordinator
Mr. Charles Bush, Irrigation Engineer, DAR; SECID team leader
Mr. Yaya Diallo, DEEP Documentation Center
Mr. Salif Diédhiou, Bureau of Training
Mr. Andre Diémé, Chief Operator, DEEP computer center
Mr. Mourtalla Diop, Marketing Section
Mr. Doudou Fall, computer operator, DEEP computer center
Miss Millie Gadbois, Statistician, DEEP
Mr. Sidi Gueye, Agronomist, DEEP
Mr. Thilot Hatsius, DEEP
Mr. Kassé, DEEP
Mr. Hans Kauffman, Head, Training Office
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Mr. Bernardin Sambou, Sociologist, DEEP
Mr. Oussmane Sané, Sociologist, DEEP
Mr. Sow, Assistant to Comptable Particulier
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Mr. Carl Wells, Veterinarian, DEEP
Mr. Tom Whitney, Evaluation Specialist, DEEP

PIDAC :

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Mr. Mamadou Salif Bodian, Chief Accountant
Mr. Alfousseyni Wane, Chief of Division, Agricultural Extension
Mr. Huan Dinh Truong, Chief of Division, Rural Engineering
Mr. Moustopha Ndiaye, Chief of Service, Intendance and Cooperatives
Mr. Lassana Ba, Chief of Zone, Oussouye
Mr. Kenio Badji, Literacy Teacher, Suel

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Mr. Ousmane Cisse, Extension Agent, Niankit
Mr. Mamedou Coly, Head, Training Section, Agricultural Extension Division
Mr. Diamanka, Head, Livestock Section, Agricultural Extension Division
Mr. Diao, Head, Agro-Suivi, Agricultural Extension Division
Mr. Francois Diedhou, Departmental Head, Bignona Department
Mr. Moussa Diedhou, Eastern Coordinator, Bignona Department
Mr. Mamadou Goudiaby, Chief of Zone, Kabrousse
Mr. Dan Han Ho, Agronomist/Veterinarian, Seed Production Service
Mr. Benjamin Manga, Literacy Teacher, Diakene Diola
Mrs. Khadidiatou Ndao, Head, Women's Programs Section, Agricultural Extension Division
Mr. Ousmane Ndiaye, Extension Agent, Kabrousse
Mr. Sadio, Coordinator, Department of Oussouye
Mr. Donald Smock, Machinery Specialist, Rural Engineering Division
Mr. Seckou Sonko, Chief of Zone, Sindian
Mr. Abdou Tamba, Head, Adult Literacy Section, Agricultural Extension Division
Miss Janice Timberlake, Fruit and Vegetable Conservation Specialist, Women's Programs Section, Agricultural Extension Division

ISRA:

Mr. Jaques Faye, Head, Farming Systems Department
Mr. Moussa Fall, Director, Djibelor Station
Mr. Samba Sall, Coordinator, Farming Systems Team, Djibelor
Mr. Mateugue Dialk, Head, Soils Laboratory, Djibelor
Mr. Souleymane Diallo, Micro Biologist, Djibelor
Mr. MorGueye, Physiologist, Djibelor
Mr. Curtis Jolly, Macro-Economist, Djibelor
Mr. Mulumba Kamuanga, Farming Systems Economist, Djibelor
Mr. Yamar Mbodj, Plant Pathologist, Djibelor
Mr. Joshua Posner, Farming Systems Agronomist, Djibelor

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Mr. Jean Claude Levy, Microsen, Dakar
Mr. Mamadou N'Dao, Head, Regional Statistics Service, Casamance Region
Mr. Aboubacar Ndiaye, IBM, Dakar
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Mr. Richard Rudberg, Harza
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