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SECTION 3.3.

ANALYSIS OF THE IDP TRAINING COMPONENT

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GLOSSARY OF ACRONYMS USED IN THE TRAINING COMPONENT ANALYSIS OF IDP

DNFLA (Mali)	- Direction Nationale de l'Alphabétisation Fonctionnelle et de la Linguistique Appliquée/ National Directorate for Functional Literacy and Applied Linguistics
SEMI (Mali)	- Service d'Enseignement pour le Machinisme Agricole/Training Service for Agricultural Machinery
CEPI (Mali)	- Centre d'Etudes pour la Promotion Industrielle/ Center for Research on Industrial Development
IER (Mali)	- Institut d'Economie Rurale/Rural Economics Institute
IPGP (Mali)	- Institut de Productivité et de Gestion Professionnelle/Productivity and Professional Management Institute
CMDT (Mali)	- Compagnie Malienne de Développement des Textiles/ Textiles Development Company of Mali
OVSTM (Mali)	- Opération Vallée Fleuve Sénégal. Térékolé et Magui/Operation Senegal River, Terekole and Magui (RDA in charge of Development in the Kayes Region)
CPR (Mali)	- Centre de Production Rurale/Rural Production Center (in each perimeter)
BNDM	- Banque Nationale de Développement du Mali/ Mali National Development Bank
BNDA (Mali)	- Banque Nationale de Développement Agricole/ National Bank for Agricultural Development
SAED (Senegal)	- Société d'Aménagement de la Vallée et du Delta du Fleuve Sénégal et de la rivière Falémé/ Office for the Development of the Senegal River Basin and the Faleme River
CNAPTI (Senegal)	- Centre National d'Application et de Perfectionnement aux Techniques d'Irrigation/National Center for Advanced Training in Irrigation Techniques (N'Diaye)

- EMR (Senegal) - Ecole des Monitrices Rurales/Training Center
for Women Extension Agents
- SONADER (Mauritania) - Société Nationale de Développement Rural/
National Office for Rural Development (RDA
in charge of Development in the SRB)
- ENFVA (Mauritania) - Ecole Nationale de Formation et de Vulgarisation
Agricole/National School for Agricultural
Training and Extension
- ITA (Senegal) - Ingénieur en Techniques Agricoles/Agricultural
Technician
- ATA (Senegal) - Agent Technique Agricole/Agricultural Advisor
- Agent de Vulgarisation/Field Extension Agent
(FEA)
- CTA - Conducteur de Travaux Agricoles/Agricultural
Works Leader
- UFM - Unité de Formation Mobile/Mobile Training Unit
(MTU)
- RIM - République Islamique de Mauritanie/Government
of Mauritania (GIRM)
- GS - Gouvernement du Sénégal/Government of Senegal
(GOS)
- GRM - Gouvernement de la République du Mali/Government
of Mali (GOM)

3.3. ANALYSIS OF THE IDP TRAINING COMPONENT

3.3.1. Objectives

3.3.1.1. General Objectives

A key aim of the IDP training program is to transfer to the farmers an understanding of and ability to use improved production technologies more effectively. General objectives of the project's training program are as follows:

1. Reshape and enhance existing farmer training in the five project zones,
2. support the selection, training, supervision, and evaluation of all field training staff involved in the project,
3. decentralize training to emphasize village and field-level training,
4. develop strong and operationally-functional linkages between the research and extension agencies and farmers in the project zones.

The IDP Training Component will develop an educational model that will help extension workers and farmers identify and solve problems, gain confidence in new farming techniques for irrigated agriculture, and improve farm and farmer association management. The most important goal of the training program is to render existing extension services more responsive to farmers' needs. By providing them with more adequate technical know-how, this program will enable farmers to assume greater decision-making responsibility at all levels of their production units. Training should promote constructive exchanges between farmers, extension agents, and researchers. This iterative process should result in an action-oriented and operational management system and will be the primary measure of success of extension services.

To accomplish these objectives, the IDP training program will focus as much as possible on developing local leadership capable of managing farmers' activities and enhancing local group development. It will also establish operational linkages between its training component activities--especially extension and production--and the OMVS Agricultural Research II Project. The definition of these linkages should be one of the first tasks of the Training T.A. staff in collaboration with the OMVS Agricultural Research II Project Manager. A protocol agreement similar to the one already signed between SAED and ISRA (Institut Senegalais de la Recherche Agricole) will be used as a model.

3.3.1.2. Specific Objectives

3.3.1.2.1. Long-Term Objectives

The specific long-term objectives of the training component, consistent with the overall strategy of the IDP, aim at raising the general standards of farmers and extension agents through the following means:

1. Providing farmers with a range of new technologies and farming techniques for irrigated agriculture so as to increase food production and incomes in the SRB;
2. creating operational farmer associations to be managed and developed in accordance with their own criteria and interests;
3. training extension agents and village technicians who, in turn, will train farmers in perimeter construction and management, pump operation and maintenance, new agricultural techniques, bookkeeping and functional literacy.

3.3.1.2.2. Short-Term Objectives

The short-term aim of the training component is to create an immediate nucleus of well-trained extension agents and farmers who will be critical in setting the higher standards needed for the long-term objectives. Short-term objectives include the following:

1. Creating a farmers' training program in perimeter development,
2. defining the roles and responsibilities of the RDA's, the IDP staff, and the farmers with regard to training and extension under the project;
3. establishing a working relationship between the research institutions, the RDA's, and the farmers;
4. supporting functional literacy programs in each of the project zones;
5. identifying and designing training modules for extension staff, village technicians, farmers' associations, and farmers themselves.

The phased training modules will be introduced separately but at the same time as the functional literacy programs. The modules will cover all the major activities of the project: irrigated agriculture; credit and farm management; animal traction; and, at a later phase, fishfarming.

3.3.2. Perceived Problems

3.3.2.1. Farmer Training

In the Senegal River Basin, regional development agencies are mandated to provide agricultural extension services, including farmers' training. In Senegal, this role is assumed by the Societe de l'Amenagement des Terres du Delta et de la Faleme (SAED); in Mauritania, by the Societe Nationale du Developpement Rural (SONADER); and in Mali by the Operation Vallee du Senegal Telekole et Magui (OVSTM). To date, however, training provided by these RDA's has generally been characterized by a top-down approach and over-centralized structures.

Training has been designated essentially to transfer agricultural techniques to farmers, without taking into account the socio-economic context within which this transfer would have to take place. Moreover, the extension services are staffed by civil servants insufficiently prepared to train farmers beyond the acquisition of elementary techniques in irrigated farming. As a result, the extension staff has little motivation, partly because it lacks both field supervision and logistical support and partly because it has scant career prospects within the RDA structures.

In general, extension agents are trained in specialized institutions in each country. They are often recruited above the 10th grade level (BEPC). This pattern holds true throughout the SRB. Students follow a two-year program that includes a practical course. A major problem is that subject matter is excessively abstract and has minimal relevance to irrigated agriculture or local problems. Following their training, students are appointed as field extension agents to carry on further training of farmers. Typical of the RDA extension services, the following features highlight the problems they encounter in the field:

1. agents with advanced training and little field experience are appointed to managerial positions where they have no sustained contacts with farmers;
2. farmers' levels of motivation vary considerably; they are rarely consulted and have little if any input in decision-making. As a result, mutual mistrust is widespread between the extension staff and the farmers, who are often directed into actions they do not understand;
3. because of the wide gap between research and training, the latter is often inappropriate to farmers' needs and production conditions; moreover, research institutions are generally isolated from the RDA's, thus hampering the diffusion of new techniques.

3.3.2.2. Common Institutional and Implementation Problems

Problems particular to each of the three RDA institutions (OVSTM, SAED, SONADER) and to training and extension activities in their

region are discussed in greater detail in Volume III, section 2, Social Analysis. Common institutional and implementation problems exist, however, and will have to be solved before project results can be achieved. Some of the most important and most difficult hurdles to be overcome by the project include :

1. the lack of resources and qualified personnel to carry out extension activities,
2. the lack of logistical support to field agents,
3. a government-directed approach to agricultural production encouraging the cultivation of a specific crop (i.e. rice) at the expense of crop diversification,
4. the absence of monitoring systems for training and production activities,
5. a lack of understanding of farmers' need and of their participatory role in decision-making,
6. a lack of integration of farming activities, such as cattle-breeding or herding.

3.3.3. Overview of the Proposed IDP Training Strategy

3.3.3.1. Introduction

An examination of available documentation on yields on irrigated perimeters over the past decade highlights the necessity for more appropriate strategy to train extension agents and farmers in the Senegal River Basin. The three states of the OMVS have already taken the first step toward accepting a new approach by attempting to redesign their training components. Though it has not yet been implemented, the new approach of each of the RDA's aims at the following:

1. The training and deployment of fewer but better-trained agents,
2. the training of village technicians and village managers of farmers' associations,
3. the establishment of a network of experimental plots on farmers' fields to ensure rapid diffusion of technical innovations,
4. the gradual turning over of perimeter management responsibilities from parastatals to farmers.

The IDP training component aims at refining, rendering more concrete, and implementing this approach.

The average yield of irrigated rice in the SRB appears, at first glance, to be satisfactory. A more detailed analysis, however, reveals extreme variations in yields obtained on the same perimeter from one plot to another. This indicates that there are socioeconomic and technical factors at work preventing certain farmers from reaching the standard of performance attained by others. The training program should therefore focus on identifying these inhibiting factors and solving problems accordingly.

The examination of yield data also indicates apparent diminishing returns. Immediately after the introduction of irrigation, yields are highly satisfactory; but all too often, at the end of the third or fourth year, production drops. This phenomenon results from a multitude of factors: poor maintenance of the infrastructure and pumps; misuse of fertilizer and water; frequent lack of cohesion among the farmers; managerial disputes in producers' associations; inadequate availability of inputs; absence of appropriately researched technological packages.

In this context, the strategy proposed by the IDP has three closely intertwined goals:

1. to focus training on the farmer and on farmers' associations;
2. to upgrade the technical skills of extension agents; and
3. to establish operational links between researchers, extension agents, and producers.

The strategy presented is both complex and simple. It is to be implemented on various levels: the village, the farm, the project, the RDA and the national institutions; yet natural and logical interactions exist between each of these levels. An acceptance and understanding of these interactions by planners and implementors will prove the effectiveness of the strategy.

Underlining this strategy and significant to its success is the importance that will be placed on community participation through direct farmer involvement. Participation in and identification with development actions that concern the community and the individual producer will not only foster better understanding between project staff and farmers, but will heighten the farmers' own decision-making capabilities.

This strategy is also committed to the establishment of strong linkages between the IDP and the OMVS Agricultural Research II Project, which will be implemented at the same time. Project Managers working in conjunction with host country officials in each of the OMVS member states will have to institutionalize these linkages. A foundation has already been established for a combined applied approach to farm system research. The government of Senegal and Mauritania have already formulated and signed agreements between research and extension services. On the USAID side, management coordination

will be assured by placing both projects under the overall supervision of one direct hire project officer in each of the three USAID missions.

3.3.3.2. Strategy at the village level

3.3.3.2.1. The Farmers' Associations

The farmers' associations are to become the hub of production activities for the community and the vital liaison between RDA agents (researchers, extension workers, technicians), marketing and credit outlets, and the farmers. In essence, these associations are to be dynamic center for a village or a group of villages, the defenders of the producers' interests.

Conceptually and functionally, the IDP and its various components rely heavily on community participation and involvement of farmers in activities which will reshape their lives. The farmers' associations will reflect the socioeconomic changes taking place in the community and within individual family units. The association can function, therefore, as the stabilizing factor in the process of social change. Its role will be to create a balance between unavoidable change and traditional values.

The training strategy to be implemented at the level of the farmers' associations includes two main activities: sensitization campaigns and the training of village technicians.

The sensitization and information campaigns will be organized by the training staff and the farmers association in each village or group of villages. The first aim of these campaigns is to make farmers aware of the different activities of the project and the possibility of their becoming involved in different phases of perimeter construction. The results of experimental plots set up in the villages will be publicized through regular information campaigns as a means of examining the problems, risks, and benefits from the introduction of new techniques and activities. In other words, the relevance of these campaigns is to create a dialogue between the community and the involved organizations by disseminating technical data but also by helping solve problems of coordination, needs, and management on the level of the associations and the institutions.

The communities will be responsible for selecting trainees to be trained as village technicians for the farmers' association. These technicians will be in charge of pump operation and maintenance, bookkeeping and management of the association, water management, and other designated tasks. Audio-visual materials will be gradually introduced for training as well as for sensitization purposes. A significant component of this training will be a monitoring system set up for and by the association to evaluate its production, management, and training activities.

The conceptual and organizational structures of the farmers' associations are presented more fully in the overall implementation plan.

3.3.3.2.2. The Farmers

Training farmers involves more than mechanically transferring know-how. The purpose of the training should be to allow the producers to use the knowledge they gain to make decisions based on new needs. It should also aim to provide farmers with better tools to control and minimize risk. This will be a slow process, for even though irrigation is not new in the SRB, it has not yet been generally accepted by farmers. The proposed strategy seeks to capitalize on the attempts made by the various RDA's to redefine their own training strategy.

A crucial element of the training strategy for farmers is to provide training in the field under actual farm conditions. The training strategy focus on a "Training and Visitation" approach, relying on good communication between extension agents, farmers' associations, and farmers. This approach will require agents to make longer and more frequent visits and to interact more closely with the farmers. This strategy will instill a greater understanding, on the part of the agents, of the farmers' most predominant concern: minimizing risk.

The approach will be practical, concentrating principally on having agents learn farmers' practices, explain the consequences of harmful techniques and present field demonstrations of improved farming methods. Agents will base their explanations on local realities rather than on handed down RDA directives. Central to this approach will be the concept of training of farmers - and agents - in assuming decision-making responsibility.

In the introductory phase to irrigated agriculture, the farmers' principal partners in the field will be the field extension agents. At a later stage, agricultural advisors will assume this role. Each training technician working with the project will be expected to function as a conduit for applied research data, which will involve transmitting information to the farmer, feeding the results of that information to the researcher, etc.

In each project zone (i.e. Podor and Bakel in Senegal; Kaedi and Gouraye in Mauritania; Kayes in Mali), instructional content, based on farmers' needs, will be designed by the Project Implementation staff in close collaboration with the RDA's central training structures. The ultimate goal is to narrow, if not eliminate, the present gap between information needed by the farmer and that provided by training institutions to extension agents.

While extension agents will be responsible for training in agricultural techniques, farmers will be instructed in credit management by the Zone Credit Agent and the Zone Supplies Officer. Irrigation engineers will be responsible for training related to infrastructure maintenance and water management, while the staff agronomist will supervise training in crop production, protection, and storage.

In each project zone, a Mobile Training Unit (MTU) will be set up to support a training activities. This unit, formed by an extension specialist, sociologist, and extension agent, will be organized as a supportive activity for field training and monitoring. Using specially-equipped vehicles, the MTU will be organized for village sensitization and information meetings as well as refresher courses for extension staff in the field. It will be organized and supervised by the Project Extension Specialist, who will train a counterpart to assume follow-up after project support has ended. The intent is to formalize this itinerant training staff within each of the RDA's not only to help compensate for a shortage of qualified personnel, but to provide functional support to the RDA in monitoring and upgrading training in extension work. It will also prove to be a useful data source for the OMVS Impact Monitoring and Evaluation Unit (see Section 6, Vol. II, Monitoring Plan).

3.3.3.3. Strategy at the RDA Level

The ultimate goal of this strategy is to transform extension operations into truly service-oriented divisions within the RDA's, composed of a small but highly qualified staff. This phase can be accomplished only when farmers and their associations acquire enough confidence and expertise in the management of their production activities. Each of the three phases of this strategy involve a gradual reduction of state involvement to the benefit of increased independence and expertise of the farmers, as described below.

Phase I involves keeping the field extension service as is until the farmers master basic irrigation techniques. The extension staff will be reduced gradually to a smaller, but more highly skilled unit. The remaining extension agents will be absorbed in other perimeter development activities, thus preventing the risk of unemployment but allowing for greater field experience and better restructuring of extension services.

Phase II will aim to establish and strengthen a smaller extension unit and to expand perimeter development activities in other zones. Phases I and II should overlap.

Phase III: as a sufficient number of farmers advance to the stage where they have mastered irrigation technology, the agricultural adviser will complement the small extension unit. The agricultural adviser will be a highly qualified agent whose multidisciplinary skills cover agronomy, management, education, leadership, and community development. That adviser will serve as a liaison between RDA's, researchers, and extension services.

He or she will also function as the primary technical adviser to farmers' associations and extension agents.

To assure that activities undertaken during the project have a lasting impact, training operations will be integrated into the RDA's regional structures. In this context, the focus will be placed on improving each RDA's performance in the transfer of new technologies to the farmers. The project will use the specialized establishments already in existence in the three states for basic agricultural training (i.e. ENFVA in Mauritania, the N'Diaye Center and CNAPTI in Senegal, and the IER in Mali). Agents will receive skills in pedagogy and in rural development problems specific to the Senegal River Basin. Various donors, including USAID, are funding advanced and middle-level third country training for agronomic researchers and trainers. These programs, such as the OMVS Agricultural Research II Project, will make it possible to offer certain RDA agents more advanced training, thus creating a core of agricultural advisers. This development will be reached at different stages in the different regions, depending on the needs of the villages and on the level of acquired expertise of the farmers.

3.3.4. Organization of Training at the RDA's level: Training and Monitoring Personnel

Training at the level of the RDA's will be implemented in two components:

1. providing technical assistance (TA) and support to the RDA's, and
2. improving the training of trainers.

The technical assistance modalities to SAED, OVSTM and SONADER are described in Volume III, Section 7.0. of the Project Paper entitled "Scopes of Work for Technical Assistance". The training program financed by the IDP at the RDA level will focus on selection and training of field agents.

3.3.4.1. Training Personnel: Role and Functions of the TA Staff

The TA staff provided to SAED, SONADER and OVSTM will include the services of a Training and Extension Specialist, preferably with a background in Sociology and/or Agriculture. This Training Staff, in collaboration with RDA counterpart, will be responsible for designing and testing a methodology for training trainers. The following guidelines should be observed in this process:

1. Selection and criteria of trainers should be more strictly defined, with priority given to farming background and experience,
2. Training institutes in each member state should be:

- a. in Senegal: the CNAPTI (N'Diaye Center): the Richard Toll Center and the Dagana Workshop;
- b. in Mali: the IER Center;
- c. in Mauritania: the ENFVA Training School.

3. The focus should be on field training in activities related to the project, such as irrigated farming and water management; animal traction and modernized manual farming techniques; livestock development; farm management; decision making training; farmer organization; and evaluation.

Each group of IDP/RDA training staff should function as an ongoing monitoring unit. Formal linkages and reporting to the Management Information System should be defined by the Technical Assistants and RDA with OMVS staff. The training group will focus, at the level of their concerned RDA, on pre and in-service training of staff and will attempt to develop a monitoring system which will provide relevant feedback to all levels of decision making. This monitoring system will be used to improve management and to help bridge the gap between field workers and RDA management staff. It will thus encourage close working relationships between developing workplans for each production year. Finally, an essential task of these teams is to simplify and reduce the number of contact points farmers need to go to for information, while increasing their access to such information.

3.3.4.2. Training of RDA Extension Personnel

3.3.4.2.1. Need for Training

Reasons for better and more appropriate training (or, more properly, retraining) of extension personnel are well-known in the Sahel and have already been noted above. The following is a summary of the major pitfalls of the present training system for all three member states:

1. The quality of field agents' training is generally low. Training at the national training institutions has been and continues to be theoretical, with almost no practical field work. A majority of the field agents and middle level extension staff have no training, theoretical or practical, in modern concepts relating to farming systems, multiple cropping, and other issues.

2. A great majority of middle and lower level agents have not received any refresher training in their subject matter since completing their initial training. Their technical knowledge and approach to improved farming must be updated. In-service training in the form of refresher courses or reorientation at the level of field and middle-level extension agents is critical in these areas.

3. In view of the limited irrigated agriculture in the Sahel, training centers in these countries tend to emphasize rainfed farming and to neglect irrigated farming almost totally. This situation is partly responsible for farmers' perception about field extension agents as not more knowledgeable about irrigated agriculture than farmers themselves.

3.3.4.2.2. Personnel: Categories and Type of Training Needed 1/

- A. Field Extension Personnel: Personnel in charge of perimeters and villages (moniteurs, encadreurs, conducteurs de travaux agricoles).

Type of Training:

1. Project Orientation Training: as soon as project implementation begins (3 weeks).
2. Refreshers' Training in rainfed crops and animal traction (May - 5 days): From the beginning of the second year of project activity, review of the previous year's program and planning for the forthcoming season would be combined with this training.
3. Annual Refresher Training in Irrigated Crops (Oct. - 5 days): From the second year onwards, planning of the forthcoming season should take place.

- B. Middle-level Extension Personnel: Personnel in charge of sectors, sub-sectors, centers, etc. (ingénieurs agricoles, ingénieurs service appliqué, CTA, etc.)

Type of Training:

1. Project Orientation Training: as soon as project implementation begins (2 weeks).
2. Crop Production Training in third country (3-4 months): at least one crop cycle; possibly at an international training institute.
3. Observation tours to selected successful perimeters in the neighboring countries (for example, Senegal or Mauritania for Malian personnel).

1/ Methodology, contents and resources for training are discussed in section 3.3.4.2.3.

- C. Higher-level Project Personnel: Personnel at project headquarters in charge of extension and other technical subject matter areas as irrigation. This would also include the director.

Type of Training:

1. Project Orientation Training: preferably shortly before project implementation begins (four days).
 2. Observation tours in third country (5 weeks): Small groups of 6-8 persons to be taken on an observation-cum study tour of areas where small-scale irrigated farming is extensively practiced with high economic returns. The trainees would visit several farms and observe and discuss with farmers a range of irrigated farming techniques and management issues. Suitable locations for such tours are the Philippines, Thailand, and India. These tours should focus on the subject matter, be well organized and be led by a person (preferably from USAID or contracted by USAID) with extensive knowledge of field problems and experience of irrigated agriculture. A total of 10-12 persons, two from each of the project zones, should be trained to form a core of well-trained high-level personnel within each zone.
- D. Senior-level Technical Personnel: Graduate training in the U.S. This level of training will not be funded by the IDP, but is planned within the proposed OMVS Agricultural Research II Project. The IDP, however, will greatly benefit from the returning trainees who would be a key resource during the critical years of project implementation (years four to six).

3.3.4.2.3. Content, Methodology, and Resources Needed

For each of the types of training identified in section 3.3.4.2.2. above, a brief description is provided below, indicating the content, methodology and resources needed. A basic premise in developing this approach has been to avoid proposing any added physical infrastructure, but rather to encourage using existing resources to the greatest extent possible to eliminate the problem of recurrent costs and unnecessary bureaucracy.

A. Field-level Extension Training

-- Project Orientation - 3 weeks:

Content:

1. Explanation of project purpose: objectives, responsibilities, lines of communication, procedures, use of project resources, coordination with other components of project (health, functional literacy, credit, research, etc.).
2. Technical Training: overview of food production issues; rainfed farming; irrigated agriculture; technology to be promoted; alternate crops; maintenance of irrigation structures; farming systems (to be developed by the TA staff and their counterparts).
3. Extension Methodology: demonstrations, conducting field trials, group discussions, contact with farmers, etc.

Resources:

1. Physical Facilities: extension training centers existing in the region should be used to hold the training sessions. It would be desirable to coordinate the timing with the vacation or breaks in the training sessions. The availability of other places should be explored as an alternative.
2. Trainers: senior project personnel, technical personnel, and specialists of the agricultural departments at the regional and national level should be used along with researchers.
3. Training Material: simple training materials (fiches techniques, etc.) should be developed and mimeographed and supplied to each trainee.
4. Compensation: trainees and trainers should be compensated at the usual prevailing rates for boarding, lodging and travel. If regional training centers are used, a fixed sum should be paid to the centers to cover expenses in terms of water, electricity, and maintenance.

-- Refresher's Training in Rainfed Crops - 5 days:

Content:

1. Technical: the classes will be on crop production issues related to rainfed farming (details should be worked out by the TA staff and their counterparts).

2. Extension Methodology: the focus should be on conducting demonstrations, trials on farmers' field, contact with farmers, group discussions and "trouble shooting" activities.

Resources: same approach as above.

Purpose: To update and strengthen the technical competence of field extension personnel and to motivate them into better work.

Note: This group of trainees should be limited to field extension agents dealing with irrigated farming.

B. Middle-level Extension Training

-- Project Orientation - 2 weeks:

Content:

1. Explanation of project purpose: objectives, lines of communication, procedures, use of project resources, supervision of field personnel, coordination, credit policy, etc.
2. Technical Training: The TA staff and their counterparts are to develop detailed topics including extension methodology.

Resources: same as those detailed above.

Compensation: as above.

-- Refresher's Training - 10 days

This personnel should be encouraged and required to participate in the refresher's training of field level agents in rainfed and irrigated crops (5 days each). This move will help improve communication between the two groups and eliminate the time, expense, and logistics involved in organizing a separate refresher's course for this level.

-- Observation Tours - 10-12 days

Observation tours to successful irrigated perimeters in the neighboring countries will be useful to expose this middle-level extension personnel to new ideas. Successful field level agents should be included in this training, not only for reward and motivation purpose, but as possible future candidates for higher training.

-- Crop Production Training - 3-4 months

This training should cover at least one crop cycle in a third country known for irrigated farming (lift irrigation as opposed to canal irrigation). Certain international agricultural institutions could be considered as suitable locations. At least two trainees from each project zone would be trained during the life of the project. The main advantage of this type of training is the intensive training received in crop production techniques coupled with a capacity to analyse problems. Those trained would serve as links between researchers and field extension personnel, especially in the design and conduct of trials on farmers' fields.

C. Higher-level Training

-- Project Orientation - 4 days

1. Content: project objectives, goals, purposes, individual roles, responsibilities, procedures, use of project resources, etc.
2. Purpose: to clarify the purpose and develop a common understanding of the project goals and strategies. Often, new projects start without a common orientation and understanding. This session should be used to develop a rapport between the TA staff and their senior counterparts.
3. Trainers: the sessions should take the form of a workshop led by the director of the implementing agency and the TA team leader. USAID and OMVS participation is essential to set the tone of the development effort in order to achieve project ends. It is also essential to involve senior officers from the implementing ministries within each member country. This session could be held at the project headquarters or in the capital of each country.

-- Observation Tours - 4 weeks

Small groups of six to eight persons are to be taken on observation-cum-study tours in third country in areas where small-scale irrigated farming is extensively practiced with high economic returns. Trainees would visit several farms and observe and discuss with farmers a range of irrigated farming techniques and management issues. These tours should focus on the subject matter, be well organized, and be led by a person with knowledge and experience of irrigated agriculture to ensure the quality of observations. A total of 10-12 persons should be trained during the life of the project so as to form a critical core of well trained personnel in the project zone (a sprinkling of middle-level personnel could be included in this group).

Point of clarification: The desired end result of this training program is to upgrade and strengthen the different levels of personnel in each RDA. This training will also ultimately upgrade farmers' knowledge by upgrading training of extension workers. A program has already been started by SAED to promote field extension agents to agricultural advisers after they have completed an additional two-year training program. Gradually, the number of field agents for each perimeter is to diminish. During the course of the project, this program should be evaluated; if it proves promising, it should be adjusted to the extension services of the other two RDA's.

3.3.4.3. The Mobile Training Unit (MTU)

3.3.4.3.1. Organization of MTU

The social scientists and extension specialist will organize an MTU in each zone. The staff of these units will be incorporated into the RDA's regional structures as supervisory extension staff. Thus, the counterpart of the expatriate expert will be the national agent who currently holds this supervisory appointment.

In Senegal, for example, the Mobile Training Unit operating in the Bakel zone will be incorporated into the Bakel office of SAED as a monitoring training unit. The counterpart of the expatriate expert will be the Deputy Central Extension Officer. In Mali, the Mobile Training Unit will be incorporated into the OVSTM structures at the level of Technical Division Administration. In Mauritania, the Kaédi Mobile Training Unit will be incorporated at the level of the Agronomic Administration for the small perimeters within the regional operations center at Kaédi. Thus, the counterpart of the expatriate expert should be a middle-level technician (either an agricultural construction engineer or foreman) with many years of field work experience.

3.3.4.3.2. Tasks of MTU

These units will be responsible for organizing, coordinating, and supervising all training activities in each project zone as learning reinforcement. The unit will be responsible for leading activities such as the sensitization and participatory development meetings and advanced training seminars for extension staff. It will also program and supervise other activities such as the training of village technicians. In addition, it will organize training operations involving the participation of services outside the RDA's domain; for example, fish farming operations involving the Forestry Service; credit management operations involving bank officials, etc.

The range of duties to be entrusted to the Mobile Training Unit include:

1. Reinforcement of instructional content and methods for farmers in the following areas:

- animal traction;
- fishponds;
- reforestation;
- producer association management;
- functional literacy;
- training for women's village associations.

This work will also be carried out in collaboration with agents of regional services outside the RDA's called upon to help with these different components of the projects.

2. Reinforcement of accounting and financial management of farmer associations: the bookkeeper of the management agency and the loan officers from the Development Banks will hold annual seminars at the RDA regional center. These seminars could incorporate two or three groups of village managers, and would include a series of practical exercises based on accounting models. Field extension agents would also take part in the seminars to whatever extent possible under the supervision of the IDP project staff.

3. Meetings: At the start and at the end of each farming season a meeting will be held in the field with the village management team. Account books will be updated and supplementary training offered as needed. The zone bookkeeper will be in charge of this work, but the credit agent will be called upon to help, together with the field extension agent.

The field extension agent will be responsible for supervising overall training on a permanent basis. National, technical, and cooperative services will also be involved in the training.

3.3.4.4. Summary of the Proposed Training Program

<u>Category of Personnel</u>	<u>Type of Training</u>	<u>Duration/Frequency</u>	<u>Resources</u>
Field Extension Personnel	Project orientation	3 weeks: Once at the beginning	<u>Physical Facilities:</u> Existing institutions in the region. <u>Trainers:</u> Specialists from national agencies and project personnel. No new personnel to be recruited. <u>Compensation:</u> Travel and Per Diem for trainees and trainers.
	Refresher training - Rainfed Crops	5 days: Annual (May)	Same policy as above.
	Refresher training - Irrigated Crops	5 days: Annual (Oct.)	Same policy as above.
Middle-level Extension Personnel	Project orientation	2 weeks: Once at the beginning	Same policy as above.
	Refresher training	Middle-level extension personnel should participate in the refresher training of field personnel.	
	Observation tours (to successful perimeters in the 3 country regions).	10-12 days (3 from each zone during the life of the project)	Travel; Per diem.
	Crop Production training	3-4 months 3rd country 2 candidates from each country during project life.	Travel; Per diem.
Higher level Project Personnel	Project Orientation training	4 days: Once at the beginning of Project	- USAID Personnel - T.A. Team and counterparts - Implementing agency leaders
	Graduate training	3 yrs - M.S. U.S. Universities. 2 from each country	OMVS Agricultural Research Project.
	Observation tours	4 weeks: 3rd country 10-17 persons life of project	Project funding.

3.3.5. Content of the Training Program

3.3.5.1. Introduction

Farmers training is a vital component of this project. The relative failure of irrigated perimeters in the past has been linked to neglect of this component.

The content and implementation of the various components of the training program will vary from one project zone to another as well as within each project zone. Following is an overall plan presented as a guideline for training on the village level, followed by a suggested implementation plan for each project zone.

Training technical assistance (TA) staff and their counterparts will be responsible for organizing the site identification phase. The zone sociologist and construction brigade engineers will supplement this permanent staff as the need arises: the sociologist will work with village meetings and help examine the land tenure situation; the construction brigade will help identify possible sites and explain the perimeter's construction plans.

3.3.5.2. Organization of Training at the Village Level

Because it is dependent on a central source of water (pump), irrigated farming poses problems of organization, management, and accounting. Introducing irrigated farming into traditional rainfed farming areas leads to identify farming operations using modern inputs such as animal traction and related equipment, fertilizers, and pesticides. Farmers thus need to be trained in a whole range of new activities related to irrigated farming. Without a well conceived and implemented training program, it would be difficult if not impossible, to convince farmers to take steps or accept certain practices that would make the operation of irrigated perimeters a meaningful proposition. Most of the elements of training identified below would require training either in small groups or individually (except in functional literacy). The approach visualized would be something like the following: the case of new perimeters, the farmers would form a farmers' association or perimeter association and follow through the processes of site selection, perimeter development, etc. At this point, the training would be site-specific and based on farmers' participation. Simultaneously, farmers would be involved in group discussions and exposed to basic ideas about how to organize into farmers' or perimeter associations, establish certain guidelines, define the role of the association and elect or nominate officials and spokesmen.

The associations, once formed, would also identify villagers to be trained as accountants and pump operators. This type of training should be open to other volunteers in the community as well. Once pump operators and accountants (village technicians) are trained, payment for their services would be the responsibility of individual associations or perimeter groups. Compensation for the services of village technicians should be mutually negotiated between the village associations and the village technicians concerned.

3.3.5.3. Components of Farmers' Training

The component of farmers' training deals with nine major topics and their related activities:

1. Perimeter development and management, including site selection as a first phase.
2. Organization and management of farmers' associations
3. Credit, accounting and inventory control (accountants)
4. Repair and maintenance of pumps (pump operators)
5. Crop Production
6. Animal traction technique
7. Animal traction equipment repair and maintenance (blacksmiths)
8. Functional literacy
9. Fishfarming (a later stage)

3.3.5.3.1. Perimeter Development and Management

This component includes two phases: a) site selection and b) construction and maintenance.

A. Site Selection

The devolution of responsibility to farmers means that they should be consulted and involved in all decisions related to the establishment of a perimeter. To achieve this aim, a sensitization and participatory development scheme has been developed, covering the period from the first technical site identification trips to the onset of perimeter construction work. This operation is expected to last between 13 and 20 weeks where new farmers are involved, and is fully described in the Social Analysis, Volume III, Section 2. In this process, the farmers will be involved in the following steps;

- the first sensitization meeting;
- a socio-economic survey of the villages;
- trips to already operational perimeters for farmers from villages without perimeters;
- inspection of possible sites;
- final site selection;
- examination and resolution of possible land tenure problems;

- explanation of plans for the perimeter and approval by the village;
- information and sensitization meetings to discuss rules governing the selection of participants by the farmers;
- meetings to discuss conflicts about criteria for selecting plot recipients;
- planning session to decide on the establishment of a producers' association, the number and choice of trainee village technicians, and the construction schedule.

B. Construction and Maintenance of Perimeters

The control of operations involved in the following aspects of perimeter construction work should be transferred to the farmers;

- ground clearing + leveling;
- layout of irrigation channels; plots;
- construction of irrigation system; dikes, basins;
- installation of motor pump;
- other activities;
- repair of dikes, canals;
- cleaning and reexcavation of channels.

For training on infrastructural maintenance work on perimeters, the content will comprise but not be limited to the following operations:

- reconstruction of dikes,
- canal cleaning;
- reexcavation of canals;
- preservation of collective installations: four dividers, stilling basins, warehouses, etc;
- establishment of a system for supervising the irrigation network during water intake.

Training in infrastructure construction and maintenance, which will take place, mainly in the field, will be in two phases:

The first phase of training will be provided in the field concurrently with construction work (three to four months). It will be controlled by the construction brigade and the field extension agent.

The second phase, monitoring and advanced training will supplement the first. It should start prior to the farm season when the irrigation system is being overhauled. Field extension agents will control this work with occasional ad hoc contributions from the construction brigade.

The social scientists will also conduct village sensitization meetings in this phase, during which they can show photos of irrigation systems destroyed through lack of maintenance of irrigation networks.

Training Procedure

Trainees: Farmers

Trainers: Engineer staff, construction brigade, sociologist and extension staff

Method: Sensitization meetings
Farmers participate in all phases of discussion, performing actual work.

3.3.5.3.2. Organization and Management of Farmers Associations

Once membership of an irrigated perimeter is determined, farmers should be assisted to form an organization known as perimeter or farmers' associations. The main objective of these associations would be to take responsibility for various functions in the day to day operation of the perimeter, including the following:

- maintenance of irrigation structures
- maintenance and operation of pumps
- purchase and use of diesel oil
- selection of villagers to undergo training to become technicians in pump maintenance and repair, accounting and bookkeeping, and animal traction.

At a later stage, the organization would also be responsible for cooperative purchase of inputs and marketing of produce.

A. Functions

Before the start of each farming cycle, farmers associations would be encouraged to draw up plans with the aid of the IDP project staff. The operation would involve drawing up a general master plan for the coming year and a specific work schedule for the rainy season for each perimeter. The main lines of the annual program will cover the number of planting cycles, the choice of the most profitable crops to plants, the farming schedule, and the setting of production targets. On the basis of this annual program, more detailed work schedules for specific seasons could be drawn up.

- At the start of each season, it will be necessary to recapitulate briefly the factors affecting the previous seasons' work. Each season's farmwork schedule should comprise the following elements:

- an assessment of the condition of the hydraulic system and the necessary repair work to be done;
- an assessment of the condition of the hydro-mechanical equipment;
- an evaluation of production input requirements including spare parts and other routine inputs for motor pumping stations (fitters, oils, etc) as well as plant health products;
- an assessment of the associations' existing stocks;
- a quantitative assessment of complementary production factor requirements and costs;
- selection of a starting date;
- the determination of organizational principles for all farming operations;
- soil preparation: water supply; labor force; completion deadlines;

For each crop (e.g. rice) the following steps should be taken:

- nursery preparation: site location; establishment of collective or individual nurseries; calculation of dimensions; single or spaced out seed bedding according to labor availability.
- Planting in beds: planning of water distribution among the irrigation units, water distribution and organization of the distribution schedule, routine civil works maintenance;
- Fertilization: quantities to be applied and staffing methods, plant care processes, harvesting (see "Agricultural Analysis: Technical Data Sheet"); deadlines and organization procedures to be observed, bearing in mind the requirements of the next scheduled crop;
- Forecast balance sheet: level of previous indebtedness, cost, production, expenditures.

Precise objectives to be achieved through training and participatory development should be determined for the coming agricultural year. For each zone and each perimeter, these objectives will be a function of results obtained in the previous farm season, and of qualitative and quantitative needs to be met. Thus, for certain perimeters, the emphasis will be on such quantitative requirements as yield increases, the expansion of farm acreage, and the reduction of diesel oil consumption. On other perimeters, however, short-term objectives of a more qualitative nature will be fixed, such as for improving the irrigation network and the organization of water distribution.

At the end of each agricultural year, results will be analyzed in light of these objectives.

B. Management Training for Farmers' Associations

Expanding the activities of the farmers' associations will necessitate adding a supplementary phase to the training program. This effort will only succeed if it can stimulate community development. Farmers' associations should thus be capable of managing the production activities in their village or zone. Membership and treasury registers should be established and a stock inventory maintained as part of the continuous responsibilities of the associations' management officers. The following topics should be included in the training program:

1. General Sensitization

- the function of the perimeter in village development;
- irrigated farming as a main or subsidiary occupation;
- other economic activities in the village;
- conflicts and complementarities among these different activities;
- consequences of technical options;
- optimal use of local resources;
- relations between farmers and herders.

2. Relations with the Regional Development Agency

- the state contribution to rural development;
- the nature, role and structures of the RDA's;
- contractual links between farmers and the RDA's;
- the villagers' contribution to their own development in the form of:
 - . financial contributions
 - . human resource investment
 - . the involvement of the educated youth.

3. Formalization of the Farmers' Association

- explanations of the rationale and functioning of farmers' associations;
- definition of the function of each elected officer;
- internal rules and regulations for cooperatives;
- the legal constitution of producers' associations or cooperatives;
- use of agricultural credit;
- importance of training activities;
- information about other associations or cooperatives;
- usefulness of links with other cooperatives.

These topics should be developed in the course of meetings at which farmers should be stimulated into active collaboration through informal discussions. The meetings will be led by a team comprising the social scientist, the extension officer, and other training staff.

Training Procedures

Trainees : Farmers; Perimeter members

Trainers : Cooperative specialist
Sociologist
Extension agents

Method: Sensitization, discussion, assistance in organizing and developing rules and criteria.

(It would be necessary to coordinate this element of training with the functional literacy program).

3.3.5.3.3. Credit, Basic Accounting, Inventory Control

The training of village technicians in accounting and management will require special efforts, since the success of the credit program, the cohesion of producers' associations, and the progressive acquisition of responsibility for the management of irrigated perimeters will all depend on the quality of this performance.

In each village, four financial management technicians will receive training. Top priority will go to the treasurer but other cooperative leaders such as the chairman, vice-chairman and members of the executive board, should be included.

If not already literate and numerate in French or Arabic, these candidates will participate in an intensive literacy program with emphasis on arithmetic. They will participate in setting up the farming schedule and in all other activities before and after each production cycle. Special emphasis should be on:

- supply of inputs;
- storage and supply of production's factors (fertilizer, selected seed, diesel oil, etc)
- credit and debt collection;
- payment for marketed produce;
- collection of subscription; and
- treasury management.

Training in credit would cover the following topics: availability of credit and its use; procedures for obtaining credit; group responsibility for loan repayment; and basic accounting.

Training Procedure:

Trainees: Persons nominated by perimeter association
Volunteer farmers

Trainers: Credit agents, bank officials
Sociologist
Extension agents

3.3.5.3.4. Repair and Maintenance of Pumps

Practical training for village pump operators will aim, first, at providing basic instruction routine maintenance work at the pumping station, that can be done in the absence of a mechanic. At a later stage, the pump operators should be taught to make simple repairs as well as to improve their knowledge of the operation and maintenance of pumping stations.

Training should cover the following topics:

- identification of parts of the pump;
- daily maintenance schedule (oil level, etc);
- periodic maintenance (oil change, greasing, etc)
- trouble shooting;
- completing minor repairs;
- stocking of frequently needed spares;
- ordering spares;
- maintenance/protection during off season.

Training for pump operators should include the following steps:

a. The supplier of the motor pump will be committed by contract to conduct a five-day initiation course for the pump operator on the spot at the time pumping station is installed. This will be followed about a year later by another, more advanced five-day course.

b. RDA's will supplement this training by organizing an initiation course at the workshop at each project zone center, under the leadership of a mechanic from the RDA's.

The pump operators can practice on a dismantled pump. This training course will last about two weeks. It will be followed by field work supervision planned to coincide with the mechanic's maintenance trips to service the pumps. Instructions should be illustrated by forms, diagrams, and photographs.

Village pump operators could benefit from training operations scheduled to be conducted in the near future by UNIDO and other organizations (see the Private Sector Analysis, Vol. III, Section 5.0.).

Training Procedure :

Trainees: Volunteer farmers preferably with mechanics experience, and those nominated by producers' associations

Trainer: Qualified mechanic

Method: Practical exercises. Repeated practice.

3.3.5.3.5. Crop Production Training

Crop production training, the most important element of the farmer training program, will be carried out continuously throughout the project. It is conceived as a field rather than a class-room activity. Extension staff would train farmers during visits to the field, with the field extension agents primarily responsible for this training, which would involve conducting demonstrations; and field trials and demonstrating various land preparation, sowing, and fertilizer application techniques in the course of field visits.

The training program would include the following topics and field activities:

- land preparation and land techniques;
- farmwork schedule;
- irrigation methods (flooding, furrow irrigation, etc.);
- raising plant nurseries (rice, vegetable);
- planting densities, methods;
- importance of line sowing application of fertilizers;
- planting depth;
- identification of diseases, and pests;
- chemical plant protection;
- optimum irrigation;
- planting dates (rationale);
- interculture, method, frequency ;

Learning will be reinforced in follow-up meetings and sessions. Follow-up meetings could cover the following subjects:

Example 1 : Soil conservation, protection and rehabilitation, erosion, prevention of soil degradation, conservation of farm, soils through the use of appropriate farming methods, earthwork construction, etc.

Example 2: Water Distribution, water and plant life, water control, water and the soil, optimal quantitative water use, irrigation systems.

In the course of these meetings, farmers should be encouraged to initiate discussions. This is the best means of assuring that their interests, worries, and concerns of the producers could be dealt with and shared by all.

Training Procedure :

Trainees: Farmers

Trainers: Extension agents

Method: Demonstrations, field trials, contact farmer approach, group discussions, field visits.

3.3.5.3.6. Animal Traction

Animal traction will add a new dimension to farming. In the first place, it will make it possible to expand farm acreage. Secondly, when used in traditional agriculture, it can help solve the problem of competition between irrigated farming and tradition-farming. (See "Agricultural Analysis" Vol. III, Section 3.2.).

Participation in this phase of the project will be optional to the farmers. Training operations will be scheduled along with sensitization and information sessions in targeted villages organized by the social scientists and animal traction specialist.

At these sessions, the farmers will be given information on the benefits of adopting animal traction farming and on how to acquire the equipment. The credit specialist will also participate in these campaigns.

Animal traction training will cover the following topics:

- choice of animals for traction (age, formation structure, race, etc.);
- management and care of animals;
- feeding; preventive health, housing; hygiene;
- preparation of animals for traction ;
- training of animals;
- equipment: choice and maintenance;
- construction of low cost housing for training center;
- preparation of compost.

The villagers will be trained by the agency contracted to implement the Animal Traction Introductory Package, assisted by the respective RDA's.

Training Producer:

Trainees: Volunteer farmers or those nominated by Farmers' Associations who have a pair of oxen and take the pair to the animal traction training center to be established near their village.

Trainers: Specially trained persons to be brought in for short periods;
Social scientist; credit specialist;

Method: Practical exercise, explanations, and group discussions.

Farmers' associations could alternatively select one or two of its members to be trained, who in turn would train other farmers in the village.

3.3.5.3.7. Animal Traction Equipment Repair and Maintenance

Locally available repair and maintenance facilities are essential for the successful introduction of animal traction. Village blacksmiths should be offered training in the repair of equipment and also fabrication of certain parts requiring frequent replacement.

3.3.5.3.8. Functional Literacy

Functional literacy will be conducted by the national institutions responsible for this training: DNAFLA in Mali, SAED in Senegal, and ILN in Mauritania. Country-specific programs are spelled out in the implementation plan that follows in section 3.3.6.

Phase 1:

The program will be designed to reach all farmers but it will focus initially on members of the farmers associations involved in project activities and management responsibilities. Literacy material should thus be designed in collaboration with the training staff to correspond to themes such as credit, accounting, organization of associations, agricultural practices, animal traction, health and hygiene practices, and other issues handled in the project. Special care should be taken, however, to include themes, materials, and norms that are culturally-identifiable by each of the ethnic groups in the region, as instruction will be undertaken in Pulaar, Wolof, Soninke or Bambara.

In each case, literacy sessions should take place in the farmers' association building, as these associations should serve as the focal point of activities in the villages. In no association exists in the village, a simple center can be constructed with the help of the villagers.

Literacy agents should be chosen from among the villagers and trained. These agents could be students, fonctionnaires, or literate villagers. The program will be directed by the literacy services in each country with the RDA responsible only for monitoring, evaluating, advising, and providing literacy materials. Literacy agents should be affiliated with each farmers' association, and should be prepared to travel to the villages linked to this association if need be. These agents will receive no salary, but their transportation and living expenses during trips should be provided by the farmers involved in the literacy program.

It is imperative that special efforts be made to include women in these programs. Indeed, it is the women in many of the SRB villages who are the most assiduous students in the current literacy programs. Women's high level of interest in literacy training has been attributed to the fact

that it not only allows them to manage their household budgets, but enables them to help children in their schoolwork which is an important consideration since women are not only farmers but household managers involved in all aspects of their children's lives.

Phase 2:

This latter phase of the literacy program should provide post-literacy training for farmers-men and women who have mastered the basic skills and want to continue their training.

Eventually, with closer linkages established between research and extension services, simple technical and agronomic written materials will be circulated in the form of regular newsletter to the farmers' associations. Farmers who have completed the second phase of training should be able to read such material and can help disseminate the information to other farmers.

3.3.5.3.9. Fishfarming

Fishfarming is a new activity along the Senegal side of the river with support of USAID and the Peace Corps working through SAED and the Water and Forestry Service. The Peace Corps is currently considering a similar program in Mauritania and Mali. The project will provide limited support to these programs as they evolve. At the same time, there is a need to better study the feasibility of fishfarming in well-chosen villages.

Fishing is not an activity undertaken by all or any farmer. It is the profession of the Subalbe caste of the Toucouleur who practice fishing all along the SRB, while the Soninké, Wolof, Khassonke, etc. are infrequent fishermen. Training for this activity will first have to be directed to this caste not only to help them improve their techniques and fishing material but also to allow them to pursue their profession once the Diama and Manantali dams are completed. The technique of fishing from fishponds is completely different from that of river fishing and a majority of the fishermen have not yet been convinced of its effectiveness. The strict social hierarchies typical of all the ethnic groups along the SRB, except for the Wolof, presently create problems in the running of the fishermen's cooperatives both in decision-making and economic distribution of benefits.

The environmental study of the dams indicates that dam construction will have a significant impact on the fish population in the Senegal river. If the impact of the dams is, therefore, well-known, what is not yet known is how this impact will affect traditional fisherman and fishfarming activities.

It is therefore highly recommended that an objective evaluation of current fishfarming activities be made along with a socio-economic and technical feasibility study in the three project zones before deciding on further fishfarming sites or activities. The marketing, processing and storage of fish and economic benefits to fishermen are problems yet to be studied and solved.

3.3.6. Implementation Plan

3.3.6.1. In Kayes, Mali

Seventeen villages^{1/} have been selected for the rehabilitation and construction of perimeters. They will serve as the locus of training programs financed by the IDP.

Over a five year period, the project will train the following groups:

- 966 farmers, in techniques of irrigated agriculture, perimeter maintenance; and animal traction;
- 7,536 farm laborers, in the same techniques;
- 34 pump operators;
- 34 water managers;
- 34 agricultural advisors;
- 17 animal advisors;
- 17 animal traction trainers/drivers;
- 17 bookkeepers;
- 34 functional literacy agents.

These persons will be trained in accordance with the summary illustrated in Table 3.3.6. E.

3.3.6.1.1. Support to OVSTM, DNFLA, BNDA and local NGO's

The project will provide a technical assistance team to OVSTM to assure proper management and technical implementation of the project and to train and upgrade OVSTM staff skills. The technical assistance team will include a Project Management and Credit Specialist, who will share project management responsibilities with the Director General of OVSTM, and specialists in agricultural extension and training, irrigation engineering, and social science, who will direct headquarters technical operations for the project and train Malian counterparts.

The technical assistance team will provide on-the-job technical training to OVSTM staff counterpart in project management, agronomy, extension and field training techniques, irrigation engineering contracting and contract supervision, and data collection and monitoring. The team will also organize annual in-service training programs for all the sector staff of OVSTM, and provide additional special training seminars in certain topics. In addition, several agricultural agents will be sent to special training programs to upgrade their skills in areas including research demonstrations, agronomy, irrigation, extension techniques, and social science methodologies through a program that is to be coordinated by the OMVS

^{1/} Listed on Table 3.3.6. A.

regional program. The OMVS will also organize several regional seminars to cover various technical subjects relevant to project implementation and provide funding for OVSTM participation.

The National Agency for Functional Literacy (DNAFLA) will conduct Literacy Training for the IDP. Under an agreement with USAID/Mali, project support will permit DNAFLA* to open a regional office in Kayes where two literacy agents and a secretary will be assigned. These two agents will organize and implement local language functional literacy programs in the 17 villages participating in the project. The training materials developed and used in the functional literacy program will relate to project activities as described in Table 3.3. F. entitled "Summary of Farmers Training Program in Kayes". The project will pay for the rental and equipment of the DNAFLA office in Kayes, a vehicle, including MOR** operational costs for the office and for the field training sessions. Credit and cooperative/private sector promotion training will be undertaken under a special agreement with the National Bank for Agricultural Development (BNDA) in Kayes. The BNDA will second a loan officer to the IDP technical assistance team posted at the OVSTM, to work with the Committee for Perimeter Coordination (CCP) and the producers' associations in extending credit information and small artisan assistance in the 17 participating villages.

3.3.6.1.2. Training of Extension Agents and Village Technicians

The project will upgrade the technical knowledge of OVSTM field agents and provide them greater mobility, more technical support from headquarters, and improved techniques for extending new crops and technologies. The extension/training specialists will first organize in-service training for OVSTM staff and then organize and prepare materials for new extension and field training activities. The social scientist will establish a data collection and project monitoring system and will work to establish ways to make the extension program more responsive to the concerns and needs of farmers. The irrigation engineer will improve OVSTM procedures for contracting perimeter design and construction and for helping farmers with canal operation and maintenance and the operation of pumping equipment.

Project field-level training will be provided by several sources: OVSTM will provide farmer training for activities within the extension program of the agency; DNAFLA will provide functional literacy and numeracy using materials developed for the technical programs of the project; a local perimeter voluntary organization will provide farmer association

* The National Agency for Functional Literacy and Applied Linguistics.

** Maintenance, Operation and Repair.

organization and management and accounting training; and other public or private institutions will be contracted to provide special training identified by the project or requested by farmers or farmer associations. This special training will include pump or other agricultural equipment maintenance and repair by the Agricultural Mechanics Training Service (SEMI), business operation and management by the Center for the Study of Industrial Promotion (CEPI), and animal traction training by OVSTM or a private implement manufacturer.

The Training Extension Specialist will determine the extent to which CEPI's activities already fulfill or can be extended to provide the advisory-training services described in the IDP project. If possible, the specialist will encourage CEPI to develop programs outlined above in the First Region. In theory, a representative will be assigned to Kayes.

To establish a direct link with the IDP project, two Peace Corps Volunteers with business background training will be assigned to work with CEPI. These volunteers will oversee implementation of the technical program listed above. To the extent that CEPI is lacking personnel or financial resources to undertake all of these activities, most of the responsibilities will be borne by the volunteers. The final decision to assign volunteers will be made jointly by the IDP specialist, his Malian counterpart, and the Peace Corps/Mali Office.

For project planning and budgeting purposes, the design team has estimated that the following extension agents/village technicians will be trained during project implementation:

- 34 pump operators (2 per perimeter) capable of identifying the main parts of the pump, operating the pump, maintaining the pump and making minor repairs;
- 34 water managers (2 per perimeter) able to understand the principles of perimeter construction, to manage water distribution, and to monitor maintenance of the canal and diking system of the perimeter;
- 34 agricultural advisors (2 per perimeter) able to provide field-level assistance to other farmers in agronomic techniques and in the identification of diseases and pests;
- 17 animal traction trainers (1 per perimeter) able to use and teach other farmers animal traction techniques;
- 17 bookkeepers (1 per perimeter) able to maintain village account books, to manage village stocks of agricultural supplies and to manage village association funds, and;
- 34 functional literacy agents (2 per participating village) who understand methods for teaching functional literacy and numeracy and are able to give classes to the villagers.

During the second, third, and fourth years, while the 11 village perimeters are being rehabilitated, the present extension staff of 11 monitors and 11 field extension agents will continue working and will take the advanced training courses proposed by the project.

Starting in the fifth year of the project, during basin development, there will be no supplementary extension staff. Field extension agents will be transferred to the new perimeters to help the farmers during the introductory phase of irrigated agriculture, while monitors will remain on the older perimeters.

Summary Tables for training activities are provided in the Appendix at the end of this chapter. The Implementation Schedule for Training in Mali is illustrated on Table 3.3.6. E of Appendix.

3.3.6.2. In Bakel and Podor, Senegal

3.3.6.2.1. Perimeter Development and Training

In the Bakel region, the same 25 villages will participate in the training program as participated in the USAID "Bakel Small Irrigated Perimeter Project". In Podor, the large perimeter will include the Podor sector and 6 neighboring villages. The villages are listed on Table 3.3.6. F. The farmers on the perimeters are also involved in rainfed and flood recession agriculture. In addition, seasonal cattlebreeding is practiced among the semi-sedentarized Peulhs. Farmers are of different ethnic groups on these irrigated perimeters and are equipped with a diesel pump, a network of canals, surface drains, small flood protection dikes, and partially leveled plots that range in size from 10 to 40 hectares. Training in this zone will be for farmers, SAED extension personnel, and village technicians. It will cover all aspects of farm management, irrigated agriculture, and technologies associated with the new farming systems. Animal traction will be introduced as a priority, particularly for rainfed agriculture.

3.3.6.2.2. Support to SAED

Training in Senegal will be organized in accordance with SAED's training objectives as set by its current mandate. The IDP will reinforce the SAED units assigned to train both farmers and extension personnel. Although training activities as such will be placed under the supervision of the training extension specialist working in collaboration with the zone social scientist, SAED's training facilities and personnel will be integrally used in the project. SAED's training capabilities should be strengthened in light of its reorganization, rather than further taxed by IDP. A mobile training unit and the combination of expertise grouped as the IDP Training Team will perform this supportive function. Extension personnel including agricultural advisors, village technicians and other supervisory and training personnel will receive training at SAED's National Center for Advanced Training in Irrigation Techniques (CNAPTI). The IDP

will improve and reinforce the capabilities of this center to train the extension staff, who in turn will train farmers on the perimeters rehabilitated or constructed by the project in the two zones.

Within the IDP framework, SAED will develop, with the TA contractor, a detailed work plan and budget for the training program. This workplan will outline the duties, responsibilities, and functions of all parties involved in this training scheme. The members of the training team will be an irrigation engineer, an agricultural extension specialist, a social scientist and a credit specialist to work with the BNDS in Podor and Bakel on the credit program. (See Appendix, Table 3.3.6. K.)

3.3.6.2.3. Other Activities Related to Training

A study will be conducted in Podor within the framework of the Bakel Region Development Plan to identify the social and economic affinities between the various groups involved. This study will be the result of multidisciplinary cooperation between technicians responsible for designing and constructing the perimeter with the IDP sponsored social scientist who will direct the study.

Another study will be conducted to address the problem of land distribution between associations for mixed farming. This study is designed to yield propositions to be submitted simultaneously to SAED technicians and the farmers. In training farmers on the perimeters, the emphasis should be on introducing and diffusing animal tracting farming. This technology is particularly relevant to the Podor perimeters, which will be larger than those in Bakel. Mechanization will generally be discouraged, but in cases where farmers can afford tractors or motorized farming equipment, the supplier will be encouraged to provide such training to them.

The IDP Perimeter Development and related training for farmers in Bakel and Podor are illustrated in the following Tables;

- Table 3.3.6. G. Bakel Perimeter Development and Training
- Table 3.3.3. H. Podor Perimeter Development and Training.
- Table 3.3.6. K. presents the Summary of the Training in Bakel and Podor (the same for both zones).

3.3.6.2.4. Training of Extension Personnel

SAED has opted to phase out the field extension agents in gradual stages and to replace them with better prepared agricultural advisors who will, in turn, train the farmers. These agricultural advisors are being trained and will continue receiving training at the CNAPTI.

The project will upgrade the technical skills of SAED's field agents, give them greater mobility and improve their mastery of extension education. A joint program will be undertaken with ISRA, using the Bakel Demonstration Farm and the N'Diaye Center to test promising new crops and techniques. Other techniques such as village level processing, storage, credit management, and marketing will be introduced as their skills mastery improves.

SAED will be encouraged to recruit women extension agents from the Women Extension Agents Training Center in Thiès, to train them as agricultural advisors to the women's producers' associations. A total of 590 village technicians, approximately 140 (25%) of them women, will be trained at the various locations to serve as agricultural advisors, bookkeepers and functional literacy agents in Bakel and Podor. The number of technicians trained each year will vary according to the number of sites built. Two pump operators will be trained for every unit of 20 hectares equipped with a pump. The number of village technicians to be trained for each post has been based on the number of producers' associations (1 for every 20 hectares, i.e., 15 cultivated hectares). Pump operators will only be trained for Bakel and the small perimeters at Podor, with larger pumps run by SAED in Podor. A water manager and agricultural advisor will be trained for each post of each producers' association. Animal traction technicians will be trained for producers' associations whose farmers will be equipped for this activity. Four bookkeepers will be trained for every farmers' association. Only ten persons will be trained in the first phase of the project. In Podor, village technicians will be trained mainly during years where there is no new acreage being put into cultivation, i.e., years five, six, and seven. The summaries of the training program for extension personnel in Bakel and Podor zones of IDP are illustrated in Table 3.3.6. K. Schedules of training and extension activities implementation for Bakel and Podor are attached as Tables 3.3.6. I. and 3.3.6. J. respectively.

3.3.6.3. In Kaedi and Gouraye, Mauritania

3.3.6.3.1. Support to SONADER

In Mauritania, training activities will be carried out primarily by the National Agency for Rural Development (SONADER). The IDP will finance the services of a technical assistance team to be based in Kaedi. The team will be headed by a Management and Credit Specialist, who will serve as Deputy to the SONADER regional director in Kaédi. The team will also have a training specialist, an irrigation engineer, and a Mauritanian social scientist.

The training program will be directed by the IDP Training Specialists. One specialist will serve as a technical advisor at the SONADER Regional Center at Kaédi, and the other at the Sector Center in Gouraye. These specialists will be administratively responsible to the project manager. Their responsibilities will include supervising the plans for all training units; developing and preparing agent and farmer training programs;

designing training materials and educational methods; budgeting; and providing logistical support planning for the training programs. They will also train two SONADER officials, who will be responsible for field training in the two sectors.

In collaboration with SONADER and its technical assistance personnel, the irrigation engineer will plan, budget, and execute programs for planning, design, construction, rehabilitation, and maintenance activities of irrigated perimeters. He will supervise SONADER national technicians and train personnel to replace him at the end of his assignment.

The management and credit specialist will work as the SONADER deputy director in Kaédi as well as with the Mauritanian banks for credit activities. This specialist will work in collaboration with the FND and SONADER to develop and implement a rural credit system for the project, covering bookkeeping and financial reporting, loan monitoring and collection techniques, internal audit procedures, input supply management, and membership and savings promotions. The candidate will also train loan officers to replace him/her at the end of his/her assignment.

Two technical aspects will be emphasized in the training program for Mauritania: (a) animal traction will be introduced only after the target groups' needs and capabilities to absorb, understand, and master the new skills associated with animal traction are carefully studied; (b) the maintenance and operation of irrigation infrastructure on the perimeters. A number of perimeters scheduled for extension are relatively old and will be rehabilitated. They are in a dilapidated state because of the hydraulic network or repeated breakdowns of the pumping station. Special emphasis will be given to disseminating preliminary information and conducting sensitization campaigns on pumping operation and maintenance and operation of irrigation infrastructure.

3.3.6.3.2. Training of Farmers

Mauritanian farmers in the villages listed on Tables 3.3.6. L. and 3.3.6. H. (Kaédi and Gouraye Zones) will receive extension services and training better geared to their needs after the sensitization and information campaigns.

Emphasis will be placed on organizing an extension/visitation system that would follow up on the training received by farmers (See Table 3.3.6. Q. "Summary of IDP Farmer Training Program in Kaédi and Gouraye").

The IDP will also launch a training program to strengthen the organization and management of village associations. These associations will be encouraged to plan their agricultural activities; to elaborate plans for credit and repayment; to maintain records and accounts; to consider new initiatives in crop diversification and animal traction; and to generally oversee the operation and maintenance of village perimeters. Functional literacy programs will be offered to interested villagers to

help them learn new agricultural and management techniques. Other types of community action projects will be promoted as well.

3.3.6.3.3. Training of Extension Personnel

Although SONADER plans to replace field extension agents with more qualified personnel, no such action has yet been implemented. One IDP objective in Mauritania will be to reinforce SONADER's training capabilities so that the RDA may deploy better qualified agents in the field and become more responsive to the needs of farmers. Training of agent will enable them to master the subjects they will then teach to the farmers.

Training of extension personnel will take place as follows for Kaédi and Gouraye. One Field Extension Officer will be selected to undergo training at SAED's N'Diaye Center in Senegal. Another will be assigned to the literacy programs on a full time basis after receiving training at the N'Diaye Center. The replacement of the present set of field extension agents by more qualified agents -- agricultural works foremen and engineers -- will proceed slowly, since the number of agents available to SONADER at the moment is rather low. Nevertheless, two middle-level technicians will be included in the field extension staff complement. The number of technicians trained each year will vary according to the number of perimeters constructed, but can be determined with precision for the pump operators and water managers, of whom there will be one each for every unit of 20 hectares (15 hectares cultivated) equipped with a pump. Two technicians will be trained for each perimeter. During the first two years, the skills of the pump operators and water managers currently employed by SONADER will be upgraded so that they can continue working under the IDP. Only 12 technicians will be trained in animal traction, since this activity will not be important in all the villages. The training of all village technicians will involve a period of initial training followed by supervision and in-service training.

The Functional Literacy program will cover only 10 villages. It will start in year four, with 10 more villages included in the program in year six.

The Summary of Training for Extension Personnel in Kaédi, is included in Table 3.3.6. P.

The IDP Extension Specialist and the SONADER staff will organize workshops in Kaédi and Gouraye for 458 village technicians to be trained as:

- (a) pump operators, capable of identifying the main parts of the pump, operating it, maintaining it, and making minor repairs;
- (b) water managers, able to understand the principles of perimeter construction, manage water distribution, and minor maintenance of the canal and diking system of the perimeter;

- (c) agronomic assistants able to provide practical advice to farmers in agronomic techniques and in identification and treatment of diseases and pests.
- (d) animal traction operators, capable of training and using animal power for cultivation of irrigated lands;
- (e) bookkeepers, able to maintain village account books, to manage village stocks of agricultural supplies and to manage village association funds and;
- (f) functional literacy agents, who understand methods for teaching functional literacy and numeracy and are able to give classes in the village.

The IDP team will also organize annual in-service training programs for all the sector staff of SONADER, and provide additional special training seminars in certain disciplines. In addition, two agricultural field agents will be sent to a special two-year training program at the N'Diaye Center in Senegal to upgrade their skills to the level of an agricultural advisor, and several agents will be trained in rural credit, construction, functional literacy, research demonstrations, extension techniques, social science methodologies, and in a later phase, fish farming. These programs will be organized and coordinated by the OMVS training unit as part of its regional responsibilities for the IDP. OMVS will also organize several regional seminars to cover various technical subjects relevant to project implementation and to provide funding for SONADER participation in these and other technical seminars.

Table 3.3.6. A.

PERIMETERS IN THE KAYES SECTOR

Perimeter	Existing Hectares		Possible new perimeters (1)	Population
	Developed	Cultivated in 82 off-season		
Maloum	26	7	—	424
Fanguene	15	3	—	410
Gumbaye	50	30	(1) 155 (2) 255	623
Sapou	15	7	—	
Dioumekon	12	1	35 + 8	424
Moussa Goya	9	5	—	138
Kamankole	40	30	—	430
Samankidi	20	7	—	2,825
Moussala	20	3	—	958
Gakoura	25	—	115	1,426
Sobokou	50	25	100	1,350
Kounta	—	—	8.4	360
Farakotossou	—	—	15.3	890(2)
Soukoutale	—	—	40	890(2)
Diakandape	—	—	11	728
Walinkane	—	—	40	336
Drame-Sobokou	—	—	150	2,033
TOTAL	282	118	933	14,246

(1) These are to be reviewed within the project financed planning and feasibility studies for the Kayes Region: financing is planned for approximately 750 hectares; net.

(2) These are estimates based on the average village size. Exact figures are not available for these two villages.

KAYES DISTRIBUTION OF IDP ACTIVITIES IN KAYES (1985-1989)

TABLE 3.3.6. B

7.8 laborers/family
 Average size of farm: manual: 0.75 ha
 animal traction: 1.75 ha
 Population: approximately 14,300

YEAR	New acreage under cultivation (ha) (cumulative)	TYPE OF FARMS		NUMBER OF NEW FARMERS			
		Animal traction (ha)	Manual (ha)	Animal traction		Manual	
				N° of farms	N° of laborers	N° of farms	N° laborers
1983							
1984							
1985	upgrading 116 (116)		116	0	0	155	1,209
1986	upgrading 116 (232)	52 (52)	64 (180)	30	234	85	663
1987	new 300 (532)	150 (202)	150 (330)	86	671	200	1,560
1988	new 300 (832)	150 (352)	150 (480)	86	671	200	1,560
1989	new 150 (982)	100 (452)	50 (530)	57	445	67	523
				259	2,021	707	5,515

TOTAL NUMBER OF FARMERS TRAINED BY THE PROJECT: 966

TOTAL NUMBER OF FARM LABORERS REACHED BY THE TRAINING PROGRAM: 7,536 PERSONS

The 232 ha already exist and are only being rehabilitated by the project during 1985 and 1986.

Increase in Acreage are: 300 ha (1987); 300 ha (1988) and 150 ha (1989)

Total: 452 ha Animal Traction or 259 farms with 2,021 laborers

530 ha - Manual Farming or 707 farms with 5,515 laborers.

41

eh

TABLE 3.3.6. C.

IMPLEMENTATION SCHEDULE FOR THE TRAINING PROGRAM IN KAYES, MALI

TRAINING ACTIVITIES	YEAR 1983	1984	1985	1986	1987	1988	1989
1. Signature of Protocol between USAID/OMVS/ OVSTM/DNFLA		X					
2. Designation of OVSTM TRAINING Director for IDP		X					
3. Orientation and Program Definition		X					
4. Arrival of Technical Assistance			X				
5. Designation of Counterpart			X				
6. <u>OVSTM</u> In- service Training for IDP Project			X				
7. Short term agriculture training				X			
8. Health Surveillance Training		X					
9. Village Technicians Training							
10. Literacy Training							
11. Farmer Training							
12. Evaluation of all activities					X		X

— : Continious

X : Beginning of Activities

Table 3.3.6. D. Summary of IDP Training Programs for Farmers in Kayes

Subjects	Trainers	Location	Duration	Methodology	Syllabus
Sensitization before construction of perimeter	1) OVSTM Agents-construction brigade 2) IDP extension specialist and Social Scientist 3) DNFLA Staff	In the 17 villages listed in Table 3.3.	7 to 10 week of frequent visits to an existing perimeter for the new sites	Information/ Dialogue with with Audio-visual support	Information concerning participation in project.
Construction	1) Construction brigade 2) extension agents 3) SEMI	Site of perimeter construction see Table 3.3.E	3 to 4 months	Explanation and demonstration in the field	Planning and content of the construction activities.
Maintenance of civil works	1) Extension Agents 2) IDP Engineer 3) Construction brigades 4) SEMI	In the field 17 villages	Before each ag. campaign One meeting before each agricultural year	Explanation and demonstrations in the field village meetings with audio-visual support	Regular supervision of civil works and maintenance operations redesigning main canals
Agricultural operations	Extension agents OVSTM Agents	In the field	During a whole agricultural campaign	Explanations and demonstrations in the field	- Production technique - Water management
Animal Traction (See "Animal Traction package" - IDP Agricultural Analysis Vol. III Section 3.1)	1) Animal Traction Training Center in Kayes 2) IDP extension 3) OVSTM Agents	Villages Villages In the field	Once/Agricultural year Three weeks During agricultural campaign	Village information meeting (audio-visual support) Explanations and demonstrations in the field	- Possibilities offered by animal traction and animal traction and for participation. Training of animals Utilization and maintenance of traction equipment
Functional Literacy	1) DNAFLA Agents including women 2) IDP Contractor	Villages	2 or 3 sessions/ week for nine months	Practicum	- Functional Literacy and numeracy in Bambara Soninke, Pulaar.
Producers associations, Collective Organization	1) OVSTM extension Agents 2) CEPI	17 villages	One meeting before each campaign	Discussion/Debates demonstrations	- Elaboration of the agricultural campaign plan - Distribution of tasks within the association
Management of Producer Association	1) OVSTM Agent 2) Agricultural Advisors 3) IDP Team 4) CEPI	Villages	2 meetings/season (beginning and end)	Discussion/Debates with audio-visual support	- Planning of the activities association - Elaboration of the Plan of credit and repayment - Accountancy

Table 3.3.5. B. Summary of IDP Training Program for Extension Personnel in Kayes

In Service Training of
Field extension agents

Subject	Trainers	Location	Duration	Methodology	Syllabus
Training seminars	1) IDP Team 2) Peace Corps 3) CEPI 4) OVSTM	Kayes and villages listed in Table 3.3.B	10 days/year in dead season - In field - In field supervision and follow up	Theory and practice	- Sensitization - Perimeter Construction - Agronomy - Pedagogy - Data collection - Management - Credit
Animal Traction	1) OVSTM 2) IDP team 3) CEMI	Kayes "	21 days	Active participation	- Animal traction - intensification of agriculture - Association of Agriculture and livestock raising
Periodic meetings between extension personnel/farmers' representatives and extension agents	1) IDP Team 2) OVSTM 3) CEPI 4) CEMI	Villages listed in Table 3.3.E	3 days/year	Informal discussions and debates	General information concerning on-going agronomic research, relations between extension personnel and farmers, content of training etc.
Producer Associations Collective organization	1) IDP Team 2) OVSTM 3) CEPI	Villages listed in Table 3.3.E	One meeting before each campaign	Discussions/debates	- Elaboration of the agricultural campaign plan distribution of tasks within the association.
Management of the producer association	1) IDP Team 2) OVSTM 3) CEPI 4) CEMI	Villages listed in Table 3.3.E	2 Meetings/season (beginning and end)	Discussions/debates with audio-visual support	- Planning of the activities of - Elaboration of the plan of credit and repayment - Accountancy

Table 3.3.6.F.

I. Senegal

	<u>Existing Perimeters</u>	<u>Ha. to be Upgraded</u>	<u>New Perimeters</u> (gross ha.)
A. <u>BAKEL</u>			
Gandé	8	8	(ext.) 12
Galladé	8	8	(1) 20
Moudery	45	28	(2) 40
Diawara	46	20	(2) 40
Yellingara	7	-	-
Manael	8	-	-
Tuabou	12	-	-
Gassambilakhé	26	26	(2) 40
Collenga-Bakel	--	-	244
Kounghani-Marabout	4	4	(ext) 13
Kounghani-Village	30	30	(2) 30
Golmy-Marabout	5	-	-
Golym-Village	-	-	(1) 15
Yafera	62	62	(4) 80
Aroundou-Emigré	10	-	-
Aroundou-Village	49	20	(2) 40
Ballou	109	-	(6) 120
Sebou	30	30	-
Debekhoule	20	20	(1) 20
Djimbe	15	15	-
Dialiquel	10	10	-
Sinthiou-Dialiquel	7	-	-
Ouro-Imadou	10	-	-
Seling	15	-	-
Kidira	33	-	-
Nayé	9	-	-
Guitta	15	-	-
Senédébou	18	-	-
Total Bakel	611	281	714
B. <u>PODOR</u>			
Podor-Sector C1	-	-	294
Podor-Sector M1	-	-	214
Podor-Sector C2	-	-	173
Fondé As	20	-	60
Dado	-	-	60
Guia	-	-	60
Doué	20	-	60
Goumel	-	-	60
Kodité	18	-	82
Total Podor	58	-	1,063
TOTAL SENEGAL	669	281	1,777

TABLE 3.3.6.G.

BAKEL: PERIMETER DEVELOPMENT AND TRAINING PROGRAM RESULTS

4 laborers/family
 Average size of farm: manual: 0.50 ha
 animal traction: 1.50 ha

YEAR	New acreage under cultivation (net ha) (cumulative)		TYPE OF FARM				NUMBER OF NEW FARMERS					
			Animal Traction (ha)		Manual (ha)		Animal Traction		Manual			
			No of farms	No of laborers	No of farms	No of laborers	No of farms	No of laborers	No of farms	No of laborers		
1982	115	(115)	-		115	(115)	-		-		230	920
1986	229	(344)	30	(30)	199	(314)	20	80	80	320		
1987	352	(496)	60	(90)	92	(406)	40	160	184	736		
1987		(486)	60	(150)	-60	(346)	40	160	-120	-480		
1988		(486)	60	(210)	-60	(286)	40	160	-120	-480		
1989		(488)	30	(250)	-30	(256)	20	80	-60	-240		
			250		256		160	640	194		776	

Total Number of New Farms in the Project: 654 (Total number of farms declines to 450 as animal traction increases)

Total Number of Farm Laborers at end of Project: 1,416

Existing Hectares: 611 ha. of which 281 to be rehabilitated

New Perimeters: 496 net ha. (662 ha. geographic area)

Total Number of Farms by Year: 354 (160 Animal Traction - 194 Manual)

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TABLE 3.3.6.H.

PODOR: PERIMETER DEVELOPMENT AND TRAINING PROGRAM RESULTS

3 laborers/family

Average size of farm: Manual: 0,75 ha

Animal traction: 1,5 ha

- 2 oxen per farm

YEAR	New acreage under cultivation net ha. (cumulative)	TYPE OF FARM			NUMBER OF NEW FARMERS				No. of new producer associations	No. of cooperatives
		Animal traction (ha)	No. of trained Oxen	Manual (ha)	Animal traction		Manual			
					No. of farms	No. of laborers	No. of farms	No. of laborers		
1984			-		-	-				-
1985										
1986	380			380			506	1,518	25	
1987	132	100	25	32	66	198	71	213	8	
1988	80	40	10	40	26	79	53	159	5	
1989	100	50	12	50	33	99	66	199	6	2
19.90	100	75	18	25	50	150	33	99	6	2
	792	265	65	527	175	526	729	2,188	50	

Total number of farms in project: 904

Total number of farm laborers in project: 2,714

Comments: - The number of farms cultivated with animal traction is greater than the number of pairs of oxen to be trained each year since it is planned that farmers will work out arrangements among themselves to share their animal traction equipment.

- The cooperatives will be set up only in year 6 after a careful socio-economic study of the field situation so as to create homogeneous groups. Each one will be made up of several producers' association. It is assumed that one of them will group the farmers of the town of Podor, and the other one, the farmers from the surrounding villages.

New net Ha to be developed: 792 - 255Ha (Animal Traction) and 527 (Manual)
175 Animal Traction Farms and 729 Manual Farms

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TABLE 1.1.6.1.

IMPLEMENTATION SCHEDULE FOR THE TRAINING PROGRAM IN BAKEL.

TRAINING ACTIVITIES	YEAR 1983	1984	1985	1986	1987	1988	1989	
1. Signature of Project Agreement	X							
2. Designation of SAED TRAINING Director for IDP	X							
3. Orientation and Program Definition		X						
4. Arrival of Technical Assistance		X						
5. Designation of Counterpart Personnel		X	4					
6. SAED In-service Training for IDP Project		X	X	X	X	X	X	
7. Short term agriculture training			X					
8. Health Surveillance Training		X	X	X	X	X	X	
9. Village Technicians Training								
a) Pump Operators		(10)	(10)	(14)	(16)			Total = 50
b) Water Managers		(14)	(16)	(16)	(16)			Total = 62
c) Accountants/Bookkeepers		(18)	(8)	(10)	(10)	(8)	(8)	Total = 52
d) Agricultural Advisors		(6)	(6)	(8)	(6)			Total = 26
e) Animal Traction Agents			(3)	(4)	(5)			Total = 12
f) Functional Literacy Agents		(6)	-	6	-	6		Total = 18
10. Literacy Training			X					
11. Farmer Training		X						
12. Evaluation of all Activities					X		X	

----- - Intermittent Activity
 _____ - Continuous Activity

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Table 3.3.6.J.

IMPLEMENTATION SCHEDULE FOR THE TRAINING IN PODOR

TRAINING ACTIVITIES	1983	1984	YEAR					1990
			1985	1986	1987	1988	1989	
1. Signature of Project Agreement	X							
2. Designation of SAED Training Director for IDP	X							
3. Orientation and Program Definition			X					
4. Arrival of Technical Assistance				X				
5. Designation of Counterpart Personnel			X					
6. SAED In-Service Training for IDP Project				X				
7. Short-term agriculture training				X		X	X	
8. Village Technicians Training								
a) Water Managers				x(12)	(12)	(22)	(32)	Total = 78
b) Agricultural Advisors				x(12)	(12)	(22)	(32)	Total = 78
c) Animal Traction Technicians				x	(6)	(12)	(18)	Total = 36
d) Accountants/bookkeepers				x(24)	(24)	(44)	(44)	Total = 156
e) Functional Literacy Agents				x(10)	(10)	(10)		Total = 30
9. Literacy Training				x				
10. Farmer Training								
11. Evaluation of Activities					X		X	

----- = Intermittent Activity

----- = Continuous Activity

TABLE 3.3.6. K. - SUMMARY OF TRAINING IN BAKEL AND PODOR

<u>TRAINEES/SUBJECT</u>	<u>TRAINERS</u>	<u>LOCATION</u>	<u>DURATION</u>	<u>METHODOLOGY</u>	<u>SYLLABUS</u>
<u>Village Technicians.</u> Pump Operation	Supplier of Pump. SAED Trainers	N'Diagne Center	-5 days initiation 5 days follow-up Initial Training of 2 weeks, follow up during pump maintenance visits	Practice on the Pump Illustrated explanations and practices on pump	-identification of the main parts of the pump and operation -operation of pump -maintenance -simple repairs
Water Management	SAED Construction brigade- RBDO Engineer Extension agents	In the field Bakel and Podor In the field	During the 3 months of construction Through whole ag. seasons	Explanations and demonstration Observation and participation	Construction of perimeter -water management and distribution. -surveillance and maintenance of civil work.
Agronomy	SAED Extension Agents IDP Extension Personnel	N'Diagne Center In the field	For 3 weeks work shop/Lectures, Demonstration Before Ag.Cycle	-Explanations and participation	-irrigated crops cultivation techniques
Animal Traction	Extension Agents	In the field	Through whole ag.seasons	Explanations and demonstrations	Utilisation of animal traction
Accountancy	SAED technician Credit Officer/ BNDS Extension Agent Cooperative Services of MRD	Bakel Podor Villages meeting places	Seminar 3 days/year Each season (beginning and end)	Practice on accountancy models(audio visual support)	-Accounting book models -Management of stocks -Management of funds
Functional Literacy	Promotion Humaine Agents SAED Agents	Bakel	2 to 4 weeks	Practice and some theory	-Methods for teaching functional literacy and numeracy
<u>In Service Training of Field Extension Personnel</u>	SAED Staff IDP Staff Contractor NGO	N'Diagne Center Podor	10 days/year off season -In field supervision & follow up	Theory and Practice	-Sensitization -Perimeter construction -Agronomy -Pedagogy -Data collection -Management -Credit
Animal traction	CETAD Bakel Agents for Animal traction	Pout/Ross- Bethio Bakel Podor	21 days	Active participation	-Animal traction -Intensification of agriculture -Association of agriculture/livestock raising
Periodic Meetings between extension personnel farmer representatives and agronomic research	SAED IDP Staff Contractor NGO	Podor Bakel N'Diagne Center	3 days/year	Informal discussions and debates	General information concerning on-going agronomic research, relations between extension personnel and farmers, content of training

TABLE 3.3.6. L

EXISTING AND PLANNED PERIMETERS IN THE KAEDI SECTOR

Kaedi Sector	Existing Ha	FED Project	USAID/WORLD BANK Project Phase 1	Project Phase 2
Youmane Yiré	15	20	50	-
Civé	40	20	60	-
Tokomadji	11	-	40	-
Koundel Reo	15	20	80	-
Guusel Gubi	-	20	-	-
Aéré Dindi	13	-	30	-
Tetiane Patoukone	-	-	20	-
Djowol	89	40	100	-
Palel Guiraye	-	-	20	-
Sintiou	15	-	40	-
Nere Walo	15	40	160	-
Roufi Aoudi	-	40	-	-
Dirol	-	-	-	300
Dwalel	-	-	40	-
Dabbe	-	-	40	-
Winding	32	-	20	300
Sori Male	36	-	80	-
Abdehah	-	40	-	-
Kaedi Gattoya	-	60	-	-
TOTAL	281	300	780	600

TABLE 3.3.6. M

EXISTING AND PLANNED PERIMETERS IN THE GOURAYE SECTOR

Gouraye Sector	Existing Ha	USAID/WORLD BANK Project	
		Phase 1	Phase 2
Khabou Guidimaka	20	140	-
Soulou	30	75	80
Diagountourou	70	100	-
Moulessimou/Diaguili	62	140	-
Liradji-El Salam-Marcel	-	20	-
Woumpou	35	50	-
Sagne	9	45	-
Toulel	33	60	-
Wali	53	80	-
Benenki	19	20	-
Synthiane	12	20	-
Pimbo Paliba-Toulel	15	40	-
TOTAL	358	790	80

Phase 2 will also include the upgrading of existing perimeters.

TABLE: 3.3.6. N

KAEDI: Perimeter Development and Training Program

3 laborers/family

Average size of farm : Manual : 0,3 ha

Animal traction : 1,3 ha

YEAR	New acreage under Cultivation ha (Cumulative)	TYPE OF FARM		NUMBER OF FARMERS			
		Animal Traction ha	Manual ha	Animal traction		Manual	
				No. of farms	No. of laborers	No. of farms	No. of laborers
Y4	200	75	125	58	173	416	1,250
Y5	404	300	104	230	690	346	1,039
Y6	76		76			253	759
Y7	100	50	50	39	117	166	499
	780	425	355	327	980	1,181	3,547

TOTAL NUMBER OF FARMERS TRAINED BY PROJECT: 1,508

TOTAL NUMBER OF FARM LABORERS REACHED BY THE TRAINING PROGRAM : 3,109

* The first two years of the project (2 and 3) will be devoted to sensitization activities and to training of farmers in the existing perimeters which are going to be extended under the project (9 sites).

Some 291 ha are already divided into perimeters and need rehabilitation.

Total new area to be developed : 780 ha (425 ha Animal Traction), 355 Manual Farming)

327 Animal Traction Farms)

1,181 Manual Farm)

TABLE 3.3.6. 0

GOURAYE: PERIMETER DEVELOPMENT AND TRAINING PROGRAM

4 laborers/family
 Average size of farm : Manual : 0 ,5 ha
 Animal traction : 1 ,5 ha

YEAR	New acreage under cultivation net ha (cumulative)	TYPE OF FARM		NUMBER OF FARMERS			
		Animal Traction ha	Manual ha	Animal traction		Manual	
				No of farms	No of laborers	No of farms	No of laborers
1985	100		100				520
1986	275 (+ 175)	150 (- 115)	125(-60)	100 (-177)	400 (-308)	250 (-120)	1000 (-480)
1987	450 (+ 175)	225 (- 75)	225(-100)	150 (-50)	600 (-200)	450 (-200)	1800 (-800)
1988	592 (+ 142)	300 (- 75)	292(467)	200 (-50)	800 (-200)	585 (-135)	2340 (-540)
1989	790 (+198)	400 (-100)	390(008)	266 (-66)	1,064(-264)	781 (-196)	3,124(-784)

TOTAL NUMBER OF FARMERS TRAINED BY PROJECT : 781

TOTAL NUMBER OF FARM LABORERS REACHED BY THE TRAINING PROGRAM : 4,188

The first two years of the project (2 and 3) will be devoted to sensitization activities and to training of farmers in the existing perimeters which are going to be extended under the project (10 sites).

New Acreage under cultivation 790ha.

Existing Perimeters : 373ha.

54

TABLE 3.3.6. P. - SUMMARY OF TRAINING IN KAEDI (FOR 14 VILLAGES)

Trainees/Subjects	Trainers	Location	Duration	Methodology	Syllabus
<u>Village Technicians</u> - Pump Operation	Pump Supplier SONAJER Contractors	In the field SONADER workshop in Kaedi	5 days initial 5 days follow up Initial training of 2 weeks, follow-up during pump maintenance visits.	Practice on the pump Illustrated explanations and practice on pump	- Identification of main parts of the pump and operation - Identification of the main parts of a pump
<u>Water Management</u>	Construction brigade IDP extension Staff	In the field In the field	During the 3 months of construction Through whole ag. seasons	Explanations and demonstration Observation and participation	Construction of perimeter - Water management and distribution. - Surveillance and maintenance of civil works
<u>Agronomy</u>	IDP Extension	In the field	Through whole ag. seasons	Explanations and participation	- Irrigated crops cultivation techniques
<u>Animal Traction</u>		In the field	Through whole ag. seasons	Explanations and demonstrations	Utilization of animal traction.
<u>Bookkeeping</u>	SONADER Accountant Credit Officer MTU Service de Coopé- ration (Boghé school)	SONADER Kaedi Villages	Seminar 3 days/year Each season (beginning and end)	Practice on accountancy models (audio-visual support)	- Accounting book models - Management of stocks - Management of funds
<u>Functional Literacy</u>	Institut des langues nationales and FE.	Kaedi N'Diaye Center in Senegal	2 to 4 weeks	- Practice and some theory	- Methods for teaching functional literacy numeracy
<u>In Service Training of field extension agents.</u>					
Training seminars	N'Diaye Center SONADER	Senegal Kaedi	10 days/year in dead season - In the field supervision and follow-up	Theory and practice	- Sensitization - Perimeter construction - Agronomy - Pedagogy - Data collection - Management - Credit As developed by IDP Extension Specialist
Animal Traction	CETAD	Mobile Center Kaedi Senegal	21 days	Active participa-	- Animal traction - Intensification of agriculture - Association of agriculture and livestock raising
Periodic meetings between extension personnel, farmer representatives and agronomic research.	IDP extensions staff SONADER	Kaedi	3 days/year	Informal discus- sions and debates	General information concerning on-going agronomic research, relations between extension personnel and farmers, content of training, etc...

TABLE 3.3.6.0 : SUMMARY OF FARMER TRAINING PROGRAM IN KAEDI AND GOURAYE

Trainees/Subjects	Trainers	Location	Duration	Methodology	Syllabus
Farmers: -Sensitization before construction	MTU + Construction brigade + Sociologist	Village	7 to 10 weeks of frequent visits to an existing perimeter for the new sites	Information/debates with audio-visual support	Information concerning participation in project.
Construction	Construction brigade + FEA	Site of Construction	3 to 4 months	Explanation and demonstration in the field	Planning and content of the construction activities.
Maintenance of civil works	FEA MTU + Construction brigade	In the field Village	Before each Ag. campaign One meeting before each agricultural year.	Explanations & demonstrations in the field Village meetings with audio-visual support.	Regular supervision of civil works and maintenance operations Redesigning of main canals.
Agricultural Operations	FEA	In the field	During a whole agricultural campaign	Explanations and demonstrations in the field	-Production techniques -Water management
Animal Traction	MTU FEA	Village In the field	Once/Agricultural year 3 weeks During campaigns	Village information meeting (audi-visual support) Demonstrations	-Possibilities offered by animal traction and modalities for participation. Animal traction techniques
Functional Literacy	FEA	Village	2 or 3 sessions week for nine 9 months	Practice	Functional literacy and numeracy
<u>Producers Associations</u> -Collective organization	FEA + MTU	Village	One meeting before each campaign	Discussions/debates	Elaboration of the agricultural campaign plan Discussions of tasks within the association.
Management of the producer association	MTU + FEA	Village	2 meetings/season (beginning and end)	Discussions/debates with audio-visual support	Planning of the activities of the association. Elaboration of the plan of credit and repayment Accountancy