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PRORES

Projet Régional de Réflexion Stratégique sur la
Sécurité Alimentaire durable au Sahel

PROJECT ON INTEGRATED CROP PROTECTION IN THE SAHEL

THE GAMBIA COMPONENT

**Funding Application Submitted by
CILSS to DG VIII of the
European Union**

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1 - SUMMARY

Crop protection has achieved considerable progress over the last years as a result of:

- the decision-makers awareness of the irrationel use of pesticides ;

- the training of crop protection technicians and farmers;

- the introduction of research on the predators and the development of methods for integrated pest management ;
- the effective joint approval and licensing of pesticides in the Sahel.

All these achievements make it possible to envision participatory research for an integrated pest management and an application of research results with a view of a sustainable and environmentally friendly agricultural developpement.

This document specifies the actions to be taken in order to get to the results and goals set for the programme, the implementation schedule, the means involved and its cost.

2 - CONTEXT

2.1. - THE GAMBIA AGRICULTURAL POLICY AND CILSS APPROACH TO INTEGRATED PEST MANAGEMENT

2.1.1. - The Gambia agricultural policy

Agriculture and its related activities is the biggest employer, providing a means of livelihood for the majority of the rural population. It provides a source of income and for food security. Overall, the macroeconomic reforms introduced in the last decade have brought mixed results for Agriculture. Agriculture's contribution to GDP declined from 39 % in the early 80s to 29 % in 1985, and further declined to 20-25 % in the 1990s.

The relative decline in performance of the sector has been attributed largely to the decline in groundnut exports. Groundnut exports form a significant proportion of the foreign exchange earnings of the economy constituting as much as 90 % of domestic exports.

Despite the decline in groundnut production, coarse grains, horticulture, fisheries and livestock sub-sectors have witnessed expansion. The boost in the production of coarse grains and horticultural crops has marked a reciprocal increase in pest problems associated with these crops and an increase in the total amount of crop value lost to pests each year.

2.1.2. - CILSS' approach to integrated pest management

Faced with all kinds of natural disasters (locusts, grain-eating birds, rodents etc.), the CILSS member countries have sought to strengthen their national services to make them chemical control services in the image of the two regional locust control organizations of the sub-region. Pesticides have been used, most of the time, without any control.

To redress the situation, CILSS has adopted a four-component approach, namely:

- a shift in crop protection policy
- a control of pesticides use
- a reduction of pesticide dependency
- the development and enforcement of integrated pest management.

CILSS' crop protection policy shift

For each Sahelian country:

- adopting a crop protection policy based on integrated pest management;

- integrating the crop protection policy into the national agricultural policy;

- restructuring the crop protection services to enable them to implement the crop protection policy;

- establishing an integrated pest management unit within each development project.

Control of the use of pesticides

At the regional level

- doing away (outside the Sahel region) with the banned pesticides composed in majority of expired pesticides such as dieldrin, HCH, etc.;

- proceeding with the joint licensing of pesticides with the allocation of a SAHEL number to all pesticides officially approved or provisionally authorized for sale;

- strengthening the laboratories of Dakar (LOCUSTOX) and Niamey (LANSPEX) to enable them to carry out analyses of pesticides residues for the sub-region;

- providing assistance to the countries in enforcing the FAO international code of conduct on the distribution and use of pesticides;

At the country level

- passing a law on pesticides;

- enforcing the International Code of conduct on the distribution and use of pesticides including the PIC (Prior Informed Consentbefore any introduction of dangerous pesticides);

- appointing the Designated National Authorities (DNA) for toxic chemicals;

- implementing FAO rules on bids;

- demanding the SAHEL approval code number for any bids;

- strengthening a national laboratory for quality controls of the formulations;

Reducing pesticide dependency

At the regional level

- The joint approval and licensing of pesticides will make it possible to:

    * ban those dangerous pesticides

    . issue provisional licences for sale or approvals for less toxic, more selective user and environmentally friendly pesticide formulations.

- Speeding up the development of tools for the detection and prediction of outbreaks of rodents populations and epidemics;

- Bio-physical and satellite data collection and processing with a view to extracting the predictions to be sent immediately to the countries;

- Training technicians in the most appropriate application equipment and formulations. Those technicians will then train, at the national level, peasant farmers (including women farmers) who, in their turn, will train other farmers;

- Encouraging the development of non chemical control methods, regularly making an inventory the findings of research in this subject with a view to enhancing them and finding ways and means to promote some of these methods commercially;

- Encouraging the establishment of a Sahelian Union of pesticides dealers and sellers in charge of seeing that the different codes and decisions stemming from the joint approval and licensing of pesticides are enforced by the national sellers.

At the country level

- Removing all forms of subsidy on purchases of pesticides

- Setting up and strengthening anti-acridian centres in the frontline countries (i.e., Mali, Mauritania, Niger and Chad) to monitor, prospect and wage a preventive control of pests in order to avoid the most pesticide-consumer curative one;

- Practising barrier treatments of locusts when more suitable pesticides are approved or are provisionally licensed for sale by the Sahel Pesticides Committee;

- Strengthening crop protection bases or look-out posts and training village groupings in those areas where grain-eating birds and rodents proliferate, for surveillance and preventive control purposes (joint actions, decentralized organs, C.P. and village groupings);

- Giving up calendar treatments in cotton growing areas;

- Training pesticides dealers and sellers;

- Cutting down advertisements on pesticides.

Development and application of integrated pest management

At the regional level

- Training senior and junior cadres in pest control;

- Proceeding with meetings of the working groups on pest control (researchers and C.P. heads of service);

- Proceeding with the seminars and colloquia on the integrated management of the main pests of food crops and forest species;

- Enhancing the value of the findings of research in integrated pest management so that they can be disseminated among development workers (bulletins, leaflets, etc.), farmers (handbooks, etc.) and researchers (journal).

At the country level

- Training agents of rural development projects, NGOs in integrated pest management;

- Training farmers, including women farmers, in schools, fields or any other field institutions (jointly by the C.P., research and extension services);

- Speeding up the development of integrated pest management methods and their applicability through participatory research and national/local workshops on the findings of research;

- Training workers of those economic services in charge of issueing documents for pesticide importation;

- Getting the pesticides dealers involved by getting them attend the national and local workshops on integrated pest management; by visits in the schools, fields or farmer experimental plots;

- Getting consumer associations involved by getting them participate in the national and local IPM workshops;

- Raising public awareness of IPM as an evironmentally friendly practice and of the positive results achieved in that field (written press, radio, TV, etc.);

- Disseminating the findings of IPM participatory research through local community leaders and personalities and village meetings.

2.2. - MAIN FEATURES OF THE SECTOR

The Gambia is a small West African country of 10,690 square km bisected by the River Gambia and surrounded on all sides by Senegal except on the Atlantic Coastline. The country lies between latitude 13 and 14 north, which makes it one of the subsaharan states of the sahel region.

The population of the Gambia is estimated to be around 1.2 million (1993 census) and has a growth rate of about 4.1 %.

Agriculture is the mainstay of the Gambian economy and acounts for approximately 20-30 % of the country's GDP which is estimated to be around 572 million dalasis in 1993 (one Dalasi = $ 0.95 US).

The average annual rainfall is about 800-1000 mm per year, concentrated in the rainy season from june to october, but the amount, intensity and distribution is highly variable through the country and from one season to another. The main crops are groundnuts, cotton, rice, early and late millet, maize and horticultural crops.

despite the diversity of crops grown there is heavy specialization by farmers in the production of cash crops such as cotton and groundnuts. With the ultimate goal of achieving self-sufficiency cereal production has become a policy issue. This has elevated the status of cereal crops like maize from the backyard to the status of a major field crop. Early millet is now grown all over the country. These changes in cultural, agricultural and economic patterns throughout our subregion have had profound effects on insect pest management and control.

The boost in ceral production and the continuous presence of green crops in the women's dry season vegetable gardens has had some marked effects on insect pest population trends and the spread of plant diseases particularly in the vegetable gardens. Vegetables are generally produced in the western region and in the north Bank Division by women growers who are no longer busy with wet season crop production. This has given women the opportunity to be more productive and to generate additional currency for their families. The dry season gardens have served as reservoir for certain pest species that are of economic importance to the rainy season crops. One such pest incidence has been with the groundnut *aphid Aphis craccivora* koch. Unprecedentedly high populations of which have been attacking groundnut fields early in the rainy season. It is conceiveable therefore to believe that the high populations built up on the vegetable crops are passed on to the groundnut fields at the onset of rains.

A situation has been created where pest organisms whose populations are usually severely reduced by the hazards of the long dry seasons have found reservoirs on which they maintain their population densities over the unfavourable dry seasons. Faced with numerous pest problems, the farmers resorted to all methods of control. Pesticides being the easiest way out and at cost free service to Gambian farmers, there was a sudden change in our pest control approach. Traditional methods which although have been slow but effective and long lasting, have been almost disregarded.

At the moment the use of insecticides and fungicides in controling insect pests and diseases of field crops and vegetables is commonly employed. For insect pests, this method of control is not only expensive but also creates other pesticide related problems including hazards to human health, environmental pollution and appearance of new pest problems, because of the elimination of natural enemies parasitoides and predators. Moreover, with the overuse and misuse of pesticides, the pests are developing resistant populations particularly at the women's vegetable production schemes.

This situation is of considerable concern to Gambian authorities and concerted efforts are being sought to reduce the amount and variety of pest control chemicals being emitted particularly on local vegetables. To improve yield and quality of these crops, pests and diseases must be controlled effectively. Effective control means applying the right treatment at the proper time and for this it is essential that pests or diseases are identified correctly. Instead of relying on pesticides, there is a need to find alternate methods for the control of insect pests, diseases and weed species that are of economic importance to major crops.

It is therefore imperative that Integrated Pest Management (IPM) Programmes will be the only way to obtain a sustainable reduction in crop damage due to pests in our agricultural production systems. We will seek to adopt an ecological approach to pest management in which all available necessary techniques are consolidated into a unified programme, so that populations can be managed in such a manner that economic damage is avoided and adverse effects are minimized. Efforts will have to present all the available information in logical and predictable format for Integrated

Pest Management (IPM) at vegetable growing schemes, women groups at major rice production project sites, for maize growers associations and cooperative.

2.3. - JUSTIFICATION FOR INTEGRATED PEST MANAGEMENT

2.3.1. - Looking at the specific objective of this broad based agricultural policy that seeks to :

- To diversify the agricultural productive base with greater attention to horticulture and livestock development.

- To increase groundnut production and productivity in order to increase rural cash incomes and foreign earnings. It is imperative that crop protection efforts must be strengthened to improve yield and crop quality. The crop protection efforts towards this improved crop situation will have to be holistic in nature and not dependent on a sole pest control method.

2.3.2. - A host of traditional pest control methods existed before the miracle pesticides were introduced to the country.

2.3.3. - The creation of a Crop Protection Service Department has made the farmer to become aware of the need to control pests but has also turned the farming communities away from the rudimentary traditional methods of control to almost total reliance on pesticides. As a result, a host of commercial pesticides became available which seem to offer an easy answer to the problems of fighting pests and diseases. However, the continuous dependence on these products will neither solve the purely agricultural problems of the small Gambian farmer, nor will they improve his financial situation. in fact the indiscriminate use of pesticides may result in a series of consequences which politically, economically, ecologically and socially are self-defeating.

It must be understood that crop protection is a complex process which requires and understanding of the interactions between the environment, methods of farming and the crop grown. Hence, crop protection cannot consist in only one specific measure, but requires a suitable combination of methods depending on the crop and the living and physical components of the ecosystem. A knowledge of these factors must play an important role in the way the farmer decides to protect his crop.

2.3.4. The Government of the Gambia spends or negotiates over US $ 15 million on pesticides alone the use of which needs to be severely reduced. This cost does not include the health and environmental hazards that may arise in the use of pesticides.

2.3.5. Even though the bulk of pesticides imported into the country comes as part of a japanese KR2 assistance to The Gambia, over 4 million US dollars is spent on the importation of pesticides by large scale vegetable producers and traders in agrochemicals. That amount of foreign exchange could have otherwise been spent to strengthen other aspects of the economy. There is an urgent need for an IPM Project that will develop sound well throughout IPM Programmes for our major crops. Such a programme can reduce losses due to pest and save over $ 20-25 million without government having to spend 1.5 million japanese Yen (15 million Dalasis).

Perhaps what is more note worthy is the precarious situation that resulted from the withdrawal of the KR2 pesticide assistance by the japanese in reaction to the change of government in July 1994. Numerous reports of severe pest incidence where received when all pesticide stock have been depleted. Most farmers were helpless for all they wished for was chemical intervention.

2.3. - BENEFICIARIES AND MAIN ACTORS

The beneficiaries are the Gambian men and women farmers who could cut down the losses caused by food crop and forest species pests by applying methods that are affordable to peasant farmers and are environment-friendly.

2.4.- PROBLEMS TO BE ADDRESSED

The main problems to be addressed are:

. How can the pest populations be reduced at an acceptable level from the economic standpoint, with no damage to the environment;

. How can be avoided the introduction, distribution and use of pesticides that are banned by the Sahel Pesticides Committee;

. How can crops, forest species and stored foodstuffs be protected with no damage to the environment;

. How can healthy fruits and vegetables be produced for export;

. How can the introduction of new predators be prevented in the Sahel.

2.5. - ACTORS OTHER THAN CILSS

The LUBILOSA Project (Biological control of locusts and grasshoppers in the Sahel) aims at developing biopesticides. It is sponsored by Germany, the Netherlands and Canada. The project is jointly coordinated by IITA and CILSS.

The Netherlands-sponsored LOCUTOX Project aims at researching the impact of chemical treatments on the environment. This project will support the joint approval and licensing of pesticides.

The OAU Conseil Phytosanitaire Interafricain (Inter-African Crop Protection Committee - CPI/OUA): Exchanges of information on crop protection, joint reflection on the establishment of regional or national quarantine centres in Africa, participation of CPI (member) in the meetings of the Sahel Pesticides Committee (SPC).

OCLALAV: exchange of information on acridians. Participation of OCLALAV in the SPC meetings.

FAO: Will back up the Sahel in implementing the Code of Conduct on pesticide distribution and use in the Sahel. FAO will attend the SPC meetings as observer. Their experience in setting up schools in the field would serve as an example for the Sahel.

PRIFAS: The collaboration will be strengthened for the validation of biomedes as well as for the impact studies of anti-locust treatments on the environment.

WHO: will continue attending the SPC meetings as observer.
HIP (Inter African Registration of pesticides) composed of 5 countries in the humid zone (Benin, Côte d'Ivoire ,Ghana, Guinea-conakry,Togo).The Sahelian Pesticides committee (SPC) will collaborate with HIP in order to control southern saheliean berdres to avoid the introduction of pesticides banned by the SPC. Consultative meetings will take place each year bettween the SPC and HIP.

2.6. - AVAILABLE LITERATURE

Local diagnostic studies PRORES- PMSA- CILSS (1996)
National plan of action studies PRORES- PMSA- CILSS (1996)

3 - INTERVENTION

3.1. - GLOBAL OBJECTIVE

4 - OBJECTIVES

Within the framework of the national agricultural policies of the Economic Recovery Programme (ERP) and the Programme for Sustained Development (PSD) the overall goal of the project will be :

4.1. Global objective

To improve nutritional standards in rural areas, reduce bulk cereal imports and increase cash crop production by improving crop production and productivity through sound Integrated Pest Management (IPM) programme developed for forests, major field crops and horticultural crops.

4.2. Specific objectives

4.2.1. - To develop and introduce sound IPM packages to farmers through training.

4.2.2. - To strengthen extension efforts towards the adoption of traditional and more natural methods of pest control with a view to convince farmers that chemical control is infact not always more effective than the altenratives.

4.2.3. - To prevent the use of chemical pesticides on vegetable crops at wemen vegetable production schemes.

PRODUCT I

Sound IPM packages will be developed for major field crops, trees and vegatables and the strategies introduced to farming communities at Jahally Pacharr rice production sites, Farmers at the Rice Dévelopment (RIDEP) Project sites, farmers at Lowland Development (LADEP) sites in the Lower River Division, Cotton farmers of the Cotton Development project in URD and parts of CRD, All registered women vegetable gardens schemes, Maize growers associations, Selected groundnut growers and Women's community « kafolu » and community forest parks.

ACTIVITIES

1. Formation of multidisciplinary working groups.

2. Development of IPM packages from available crop protection information and the established inventory of traditional pest control methods practiced by Gambian farmers.

3. Disseminate information within an enriched recommendation algorithm.

4. Identify project personnel to be involved in IPM activities of specific products ; Example rice, cotton, etc.

5. Prepare training materials.

6. To organize one week training of trainers for all Subject Matter Specialists (SMS) at each of the six Divisional Agricultural Centres.

7. Monthly training of extension agents by the SMS in the different crop disciplines.

8. Weekly training of women vegetable growers during the vegetable production season.

9. Simultaneous monitoring and evaluation of all training activities by the Monitoring and Evaluation Unit.

10. To conduct assessment workshops (with farmers) to evaluate the programme and update the design for the next growing season.

PRODUCT II

Traditional and more natural crop protection methods will be adopted by the efforts of a strengthened agricultural extension service.

ACTIVITIES

Survey

- Identification of plants/plant products by the multidisciplinary working group.
- Collect all available information on traditonal pest control methods and the use of plant materials in crop protection
- Introduce the use of these pest control methods to extension agents during monthly training sessions.
- Develop training aids on traditional pest control methods and the use of plant materials in crop protection.
- Organize compaigns through radio and television and organize field days where the use of these materials will be demonstrated.
- Layout demonstration plots at all garden sites for women growers.
- Emphasize the negative effects of chemical pesticides in our vegetable production systems through meetings and the media.

Mobility

- Provide means of mobility to IPM Monitors at all Divisional agricultural centres.
- Develop training aids on traditional pest control methods and the use of plant materials in crop protection.

PRODUCT III

Women at registered vegetable garden schemes in Western Division and North Bank Division will stop using chemical pesticides and rely on traditional methods and the use of recommended plant products for pest control.

ACTIVITIES

1. Purchase and distribution of neem berries by the Project to vegetable growers during the first two years of the Project period.

- training of women at vegetable garden sites in the preparation of neem products.

- Request for a training of trainers workshop through GTZ on the use of plant materials in crop protection.

- Let farmers collect and prepare neem berries for themselves after the first two years to the project.

- Encourage visits between members of the different garden schemes.

4 - HYPOTHESES

4.1. - DIFFERENT LEVEL ASSUMPTIONS

- *Policy makers:* the project assumes that the different environment protection policies will include integrated pest management and will declare it as a national crop protection policy.

- *Technical decision-makers:* the project assumes that the findings of the research work, crop protection observations, inventories, traditional control methods and farmers' know-how should be analyzed with a view to determining integrated pest management "technological packages".

- *Farmers*: the project assumes that they agree to apply control methods which do not or require little pesticides and preserve their environment.

4.2. - RISKS

. Failure by the Government to declare that they have adopted a crop protection policy based on integrated pest management.

. The low level of literacy among the farmers;

. Invasions by acridiens, grain-eating birds and rodents generally require considerable chemical treatments to get rid of those pests as quickly as possible.

A sustainable Integrated Pest Management Programme can be successfully implemented with ease within these planned activities except for few bottlenecks.

A sustainable Integrated Pest Management Programme can be successfully implemented with ease within this planned activities except for few bottlenecks.

THE LITERACY STANDARDS OF COMMUNITIES

This factor may affect the farmers receptiveness to IPM strategies especially the concepts of economic thresholds, and other environmental considerations.

RISK AVERSIVENESS

* Integrated Pest Management recommendations are generally not compatible with the entomohorbic concepts of our farming communities and farmers are generally concerned with the safety of the crop in the field than the one that is yet to be planted. Therefore, the very presence of insects on the crop constitute a pest problem irrespective of its pest status.

* A good majority of our farming communities have low levels of education with most of them being illiterate. As a result, the adoption of IPM strategies will imply the adoption of a concept which has to involve a new approach to the pest control problem or the revision of the pest control concept which will not be a simple adaptive transfer of technology.

* In the event of an invasion by migratory pests such as locusts, massive spray exercise is not avoidable especially during the first two years of the project period. Thereafter, however, farmers will be able to employ more environmentally friendly methods with some amount of success even under emergency pest situations.

* Under our traditional land tenure system, there are cases where the farmer does not know which land will be assigned to him the following year, which also means that he will abandon the land cultivated during the present cropping season. This situation may constitute a factor hindering the recommendation of any particular method of rotation or the elimination of certain plants so as to reduce their grain production, or to carry out an end-of-cycle ploughing (which has been mandatory on only the cotton growers).

* The characteristic long dry seasons of the sahel and the usually long (up to two weeks) intermittent dry spells during the rainy season are sometimes detrimental to the use of certain natural enemies for controlling pests especially entomopathogens as IPM strategies.

5 - IMPLEMENTATION OF THE PROJECT

5.1. - Human resources

The national Integrated Pest Management team will be composed of the following national experts:

- 1 Entomologist
- 1 Phytopathologist
- 1 Weed scientist
- 1 specialist in pest vertebrates (plundering birds and rodents)
- 1 specialist in surveillance and agricultural warning
- 1 Phytopharmacist
- 1 specialist in phytosanitary control and quarantine.

The team will be supported by researchers:

- The Agricultural Pest Management Unit (APMU) of th Departement of Agricultural Services (DAS) will be the principal implementation agent with collaborative support fgrom the following sectors :

➢ Horticultural Unit of the National Agricultural Research Institute (NARI).

➢ Departments of Planning and Forestry, Ministry of Agriculture and Natural.

Des consultants, dans les domaines non couverts par les experts nationaux, seront sollicités.

Consultants in those areas not covered by the national experts will be required.

EQUIPMENT

- 3 all-roads vehicles
- 10 mopeds
- Equipment for crop protection posts and training

5.2 - ORGANIZATION - IMPLEMENTATION PROCEDURES AND MODALITIES

ORGANIZATION

The Gambian component is part of the Regional Integrated Pest Manangement Project to be coordinated by the Sahel Institute at the regional level. At the country level, the role of the different actors is stated in the following table:

Objectifs spécifiques	Intervenants								
	Gouvt.	APMU	Recherche	DAS	ONG	CRPA	Privés	Paysans	Régional
Politique de LI	*	*	*	*		*			
Formation de cadres	*	*	*	*	*	*		*	
Comité national LI	*	*	*	*	*	*	*	*	
Recherche participative		*	*	*	*	*	*	*	
Transfert de technique		*	*	*	*	*		*	*
Contrôle phytosanitaire		*	*						*
Contrôle pesticides		*	*				*		*
Surv./Lutte		*			*	*		*	
Coopération Sous-Régional	*	*	*						*

The Gambian strategy for the application of integrated pest management is based on the training of farmers and their participation in a participatory research work and technology transfer.

This pilot action is expected to gain ground in each region.

IMPLEMENTATION PROCEDURE

The National Authorizing Officer will delegate the implementation of the programme estimates to the Delegated National Authorizing Officer (the National Director of the Gambian Component).

The Regional Coordination of the Project will be responsible for working out annual programme estimates for submission to the Regional Coordinating Committee.

The "Payment and Accounting" Department of EDF-Banjul will commit the programme-estimates and make transfers.

IMPLEMENTATION MODALITIES

. The national integrated pest management coordinating committee will control the activities planned.

. The regional coordinating committee composed of the Chairpersons of the national coordinating committees, two representatives of the donor and a representative of the delegated Regional Authorizing Officer.

5.3. - IMPLEMENTATION SCHEDULE

Detailed implementation timing of the first phase

Year Objectives (OS) Activities (A)	1	2	3	4	5
OS 1 **OS 2** **OS 3** **R1** A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 **R2** A1 **R3** A1					

5.4. - COST AND FINANCING PLAN

COST (ECUS)

ACTIVITIES	COUTS
Consultants	40.000
Administrative Support	15.000
(In country) Missions	12.000
Research contrat	25.000
Training	170.000
Workshops-meetings	70.000
Teaching materials	190.000
Equipment	350.000
Runing	125.000
TOTAL	**1.000.000**

FINANCING SCHEME

First year	:	384.615
Second year	:	153.846
Third year	:	153.846
Fourth year	:	153.846
Fifth year	:	153.846

5.5. - SPECIAL CONDITIONS AND ACCOMPANYING MEASURES BY THE GOVERNMENT

- . The Government has adopted an environmental Code..

Within the context of the Economic Recovery Programme (ERP) and the Programme for Sustained Development (PSD), the Gambia's agricutral policies are based on development goals of improved nutritional standards in rural areas, the limitation of bulk cereal imports, increased cash crop production and diversification of the agricultural base. Based on this overall policy stance, the following specific objectives among others will make the adoption of IPM practices a precept for any realistic improvement in the economy.

1. To diversity the agricultural productive base with greater attention to horticulture and livestock development

2. To increase groundnut production and productivity in order to increase rural cash incomes and foreign earnings.

3. To improve access to imputs, research and seed multiplication.

4. To increase production and productivity of cereals.

5. To improve the income generating capacities of rural women.

6. FACTORS CONDUICIVE TO VIABILITY

6.1- Support policy

The Government will contribute, over the nest five (5) years, with the following resources:

Personel	:	407.000 ecus
Structure	:	76.153 ecus
Equipment	:	77.846 ecus

To meet these objectives agriculture has to be diversitied. Under such human managed systems, conditions are created conductive for pest outbreaks. For instance, genetic diversity is reduced in crop plants manipulated for increase yield, attractiveness, and resistance to certain pests - often causing a consequent reduction of natural resistance to other pests and stresses in the physical environment. Our farming activities, i.e land clearing, burning, ploughing fertilization, irrigation, and the even spacing of plants in our farming systems result in a notable lack of spatial diversity, thus making it easier for small organisms like insects to find their hosts with ease.

Since our modern agricultural practice imensely simplifies the ecosystem giving rise to regular and severe pest outbreaks and since the ecological, economic and social implications of sole reliance on pesticides is understood, we have to adopt more sound methods of pest control if we are to achieve the objectives derived from our national agriculture and natural resources policies.

6.2- Viable technology

The IPM project of the 1980s has created knowledge base for the development of sound Integrated Pest Management Programmes especially when we are able to make good use of the inventory of traditional pest control methods in a compatible manner.

This pool of knowledge has the backing of a well structured extension system for the dissemination of relevant farm information for adoption by farmers. With the sudden awareness on the part of policy makers about pesticide related problems, the National Integrated Pest management Committee when formed will find it easy to push IPM policies through governmental and non-governmental institutions.

6.3- Environmental situation

Our already fragile sahelian ecosystems can no longer continue to accommodate ecologically disruptive practices. The diversity in the varieties and types of crops grown dictate the availability of food in abundance for a longer period and therefore a more rapid growth in pest populations. Perhaps what favours the rapid increase in populations of some major pest species is the intermittent dry spells that mark the beginning of rains in the sahel.

These closely related environmental factors when put into consideration will enhance the farmers willingness to integrate pest control methods in order to attain a more longer lasting and a less ecologically disruptive solution to pest problems.

6.4- Sosio-cultural context

Even though our farming populations have been exposed to a cost free pesticide-use system, we are still lucky that socio-economic and cultural status of our farming communities may not be compatible with the overuse of agricultural chemicals. As governments is exclusively dependent on foreign grants for the supply of pesticides the lessons learnt from this year have thought a lot of farmers the danger in relying on pesticides (that may not be available) for all our pest control needs.

If pesticides have to be purchased (which eventually will have to be the case) by farmers, most farmers will soon find out how unwise it will be to apply expensive synthetic pesticides to the low valued crops grown within our farming systems. This will have a direct impact on the amount of pesticides used on field crops and on increasing awareness in the use of alternate methods of pest control. In fact women vegetable growers presently turn to neem products than the more expensive and at times not available pesticides. If not for anything else, the unaffordable cost of pesticides will force the farmers to go back to traditional pest control methods and cultural practices that make the crop ecosystem not conductive to rapid increase in pest populations.

Even though, environmental contamination and the consequences of chronic human exposure to pesticides may remain with us for some years as reminders of the damage pesticide misuse and overuse can cause, the economic costs of pesticide use on individual farm families and society as a whole will be easily realized.

Farmers will be involved at all stages of project implementation i.e from planning to evaluation so that factors that may affect or hinder the adoption of IPM recommendations will be progressively observed and checked. This factor may be best illustrated by the difference between the farmer's and the scientist's perception of a pest problem. If farmers themselves have to gather the information upon which pest control actions will be based, those informations will be more easily understood when based on the qualitative and not on quantitative aspects of damage.

6.5. - INSTITUTIONAL AND MANAGEMENT CAPACITY

Schools in the fields and participatory research will help the farmers to acquire the basic knowledge to apply an environment-friendly crop protection.

Integrated pest management enables the farmers to manage themselves the crop protection problems encountered in their fields, thus avoiding significant yield losses from the economical point of view, and with no damage to the environment.

6.6. - ECONOMIC AND FINANCIAL ANALYSES

Chemical control requires the purchase of pesticides, treatment material, all-roads vehicles, agricultural aircrafts (or flight hours) which is very costly for the national budgets and the sahelian farmers (because it was decided that pesticides and treatment equipment will not be given free to the farmers).

According to the FAO, African countries import every year pesticides amounting to US$ 500 million. The difficult business cycle resulting from the devaluation of the CFAF for several countries and the farmers doesn't make some agricultural inputs (including pestides) cost-effective. For instance, the costs of pesticides- which were usually common in the Sahel- now range between 10.000 and 20.000 CFAF/kg while the equipment for the treatment costs about 30.000 CFAF. The use of such inputs is no longer affordable to the sahelian farmers especially those food producers.

7 - MONITORING-EVALUATION

The activities of the project will be monitored and assessed according to the above evaluation indicators in relation to the expected results and the activities of the specific objectives defined (see Table). A preliminary mid-term evaluation (3rd year) will be conducted and a second evaluation will be undertaken in the 5th year..

The project will be closely monitored progressively bu IPM monitors in close collaboration with the Department of Planning (DOP) and the Monitoring and Evaluation Unit of the Departement of Agricultural Services.

Monitoring-Evaluation Indicators

N°	Specific objectives	Monitoring-Evaluation indicator
1	Integrated pest management policy	Official IPM statement
2	Training of national cadres	- 12 technicians trained in pest management - 20 CP officers and heads of the phytosanitary bases trained - Training of 2 Masters level in acridologie - 10 senior technicians trained - farmers trained
3	National Integrated Pest Management Committee	- Documents on the situation of integrated pest management activities of the different partners - Memorandum of Understanding between the partners - Report on the meetings for the formation of committees
4	Participatory research	- List of developed technologies available - Selection of project sites and pilot farmers
5	Transferred technologies	-Number of transferred technologies - The methods for technology transfer are selected and validated
6	Efficiency of phytosanitary control	- 5 phytosanitary control posts equipped
7	Control of pesticides use	- Control officers - Reports on pesticides control submitted - National pesticides committee set up - Equipment of the laboratory for quality analysis completed/strengthened
8	Phytosanitary surveillance and control	- Activity reports of the phytosanitary bases - 50 farmers trained per year
9	Strengthening of sub-regional cooperation	- 2 cadres trained in IPM - 1 to 2 sub-regional visits or meetings for two members of the national IPM Committee - Reports of the Sahel pesticides Committee - Reports of the border meetings