

CHAPTER 6

Implementation of the Pilot Project

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6.1 Objectives and Activities of the Pilot projects

6.1.1 Outline

(1) Objectives and activities of the pilot projects

The approach of this study is i) conducting a preliminary Action Plan based on the results of the previous study (priority projects) and its analysis, ii) realizing part of the activities of the Action Plan as trials or tests and iii) developing a definite Action Plan through the process of implementation of these activities. Therefore, in addition to technology transfer and the benefits brought about by the activities, the pilot tests have the objective of acquiring information for the preparation of Action Plan.

Measures taken in the preliminary Action Plan (Table 6.1.1) are based on the proposals and priority projects of the phase 1 study and the issues of development of the supervised oases as shown in Table 4.3.1. Among these issues, the following lower cost activities that could bring some effects by the end of the study have been implemented, taking into account the effective implementation of the points concerned. The relationship between the Action Plan and the preliminary pilot projects is shown in Table 6.1.2 and 6.1.3 at the end of this chapter.

1) Improved farming techniques

Under the improved farming techniques, vegetable gardening and poultry breeding whose effects in supporting women are confirmed by the phase 1 study are to be realized. The objectives of vegetable gardening are to improve productivity through the introduction of improved techniques, examining the possibility of effective water use and improving nutrition through increased consumption of vegetables by the extension of the growing period. The objectives of poultry breeding are to improve nutrition and rising income and the diversification of sources of protein by the consumption of white meat and eggs.

2) Improving health and hygiene

It is sought to ensure minimum medical service and spontaneous participation of the inhabitants in these activities. In this context, the former auxiliary midwives (AA) will also serve as community health staff (ASC) in order to conduct extension activities.

3) Activities generating revenues and support for women's organizations

Beside improving livelihood and production techniques at the individual level, strengthening the management capacity of women's organizations will be

conducted in order to rationalize and sustain the operations.

4) Strengthening the administration on the extension activities to support women

In addition to strengthening the capacity of the staffs of MCPFEF, which are responsible for the coordination of the support for women or for the consideration of gender aspect, strengthen the collaboration between the departments concerned at regional level and promote the extension activities among oases residents with a view to strengthen the regional administration in the advisory services.

(2) Relationship between the pilot tests of the previous JICA study and the pilot projects of this study.

Among the tests above, 1) Improving farming techniques and 2) Improving health and hygiene are the succession of pilot tests carried out under the previous JICA study. And 3) Activities generating revenue and support for women's organizations, and 4) Strengthening the administration on the extension to support women are the tests that have been added this time for the preparation of the Action Plan.

Orientation of the activities of improved farming techniques and improved health and hygiene based on the results, problems and points of improvement in the tests of the previous study are summarized in the Table 4.1.1 of Chapter 4.

1) Discussion on the possibility of adopting the cultivation techniques or livestock breeding whose effectiveness is proven through testing by other zones or oases and the method of extension within and outside the oases.

Depending on the outcome of the study for the sites supervised by the previous study, there are oases where ridging and shading techniques are continued, but those of composting, dry season cropping and drip irrigation have been abandoned. Regarding the poultry breeding, although one demonstration cage has been kept, we could not even see the extension inside the oasis.

It is therefore necessary to consider the following items as related to the use of locally available materials, the elaboration of alternative plans by the inhabitants themselves and the development of textbooks (guides) with simple techniques in Arabic for the extension officers and the people.

2) Consideration of the method of administrative support for changing the content of activities by the initiative of the people as the information obtained by the pilot test is inadequate and the necessity to reflect the needs of the people even if this element is proposed as a priority project of the previous study.

Under the previous study, the development of rural centres and the consultation by itinerant doctors or nurses are proposed. Yet there is a need to consider a means of

support at reduced cost by exploiting local resources and the institutional system of the country, taking into account that the main oases have health posts with nurses.

- 3) Consideration of income-generating activities and methods for the training of women's groups for the capacity building of women and their organizations that have not been studied by the previous study.

It is necessary to consider in the context of the present study means of integrated support, combining the training of women's groups with the technical training/support for the improvement of agricultural techniques or living conditions in order to diversify women's productive activities and improve their living conditions.

(3) Plan of Implementation of the Pilot projects

The activities of the Pilot projects were carried out in 3 phases.

- Step 1: Preparation and partial execution of the activities of the Pilot projects (January-March 2006)
- Step 2: Testing of the preliminary vegetable gardening, start-up of other activities and monitoring, (May-September 2006)
- Step 3: Execution of all activities and monitoring (October 2006 - November 2007)

Table 6.1.4 shows the main activities of the pilot project.

Table 6.1.4 Main Activities of the Pilot Project

Tests	Step 1: Preparation and partial execution of the activities	Step 2: Executing preliminary vegetable gardening and start of other activities	Step 3 : Executing all activities
Vegetable gardening	<ul style="list-style-type: none"> - Selecting target cooperatives - Preparation of materials and equipment - On-farm Training 	<ul style="list-style-type: none"> - Trial of vegetable gardening in summer - Culture with shading - On-farm Training - Consideration of water use - Monitoring 	<ul style="list-style-type: none"> - Review and continuation of vegetable growing activities - On-farm Training - Consideration of water use - Preparation manuals / guides - Monitoring
Poultry farming	<ul style="list-style-type: none"> - Selection of target cooperatives - Preparation of materials and equipment - On-farm Training - Construction of henhouse 	<ul style="list-style-type: none"> - Action against heat - On-farm Training - Extension to surroundings - Monitoring 	<ul style="list-style-type: none"> - Extension to surroundings - Preparation manuals / guides - Monitoring and evaluation of activities
Health Improvement	<ul style="list-style-type: none"> - Explanation of the activities to the people - Selection of candidates for ASC and AA - Preparation of training 	<ul style="list-style-type: none"> - Training of ASC and AA - Health Sensitization Activities - Monitoring growth of children 	<ul style="list-style-type: none"> - Sensitization Activities for assistance in childbirth - Sensitization Activities on Health - Preparation of manuals / guides - Monitoring and evaluation activities

Tests	Step 1: Preparation and partial execution of the activities	Step 2: Executing preliminary vegetable gardening and start of other activities	Step 3 : Executing all activities
Income generating Activities	- Explanation of the activities to the people - Preparation of training - Study of advanced areas	- Training - Strengthening Organizations - Monitoring	- Preparation manuals / guides - Monitoring and evaluation activities

ASC: Community Health Staff

AA: Auxiliary Midwife

The notable points among the activities at each stage are as follows.

- (1) As the first step, explain the purpose of the present study or the content of the activities to the inhabitants, AGPO, and to the people's organizations and organizations concerned prior to the start of the Pilot projects in order to obtain their understanding and cooperation.
- (2) Coinciding with a dry period or rain with high temperatures, the second step is not appropriate to vegetable gardening or poultry farming. It will therefore be necessary to take measures against heat at the same time as caring for people.
- (3) All activities will be carried out at full speed from the 3rd stage. The extension to the nearby oasis will be started from this stage.
- (4) If it receives good rainfall during the rainy season, we can assume that the people will be absent to participate in the activities. Measures must be taken in this case.

A stage extension, gradually reduce the involvement of the study team, so that the people take the initiative.

6.1.2 Implementation Principles

For the sustainability of women's activities, it is necessary that these activities are regarded as a motor for improving the lives of people, households or oases, and are well entrenched in the life of the people. In addition, the development of techniques for improving living conditions cannot be expected if one depends on the guidance provided by the outside world in an environment like the landlocked oases. Hence, techniques or facilities to be introduced must be relevant to the people for their renewal or management. Thus, the emphasis is on the training for women and women's groups that are active in taking initiatives.

Taking into account the following issues, the activities of the pilot projects will be carried out by focusing on their effectiveness, as well as their extension and the sustainability of the techniques applied.

(1) Residents participants

The role of women become increasingly important in the changing roles of men and women in the oasis society and the effects of the support for women's organizations being confirmed by previous study. Women and their groups are mainly concerned, however, the possibility of involvement of men is not ruled out.

(2) Development of equipment/materials at reduced cost and local resources

Taking into account a sustainable development provided by the people themselves, try to make maximum use of local resources or equipment/materials at reduced cost.

(3) Introduction of technologies easy to be adopted by the people

While taking into account the sustainable development by the hands of the people, try to make maximum use of the local resources or the equipment/materials at reduced cost.

(4) Collaboration with AGPO

The AGPO are organizations that are self-managed by the oasis residents. Although the activities are intended for women and groups of women, we need to keep close contact with the members of the AGPO to obtain their understanding. Women's organizations will be inexperienced at the start of the activities; it will seek the assistance of the AGPO when things go wrong.

(5) Support to the extension services

The administrative support to the extension activities is needed to spread the results of the pilot projects in other areas. To do this, the regional staffs dealing with extension services (MCPFEF, MAE and MS) are expected to take charge of these activities in parallel with the transfer of technology.

6.1.3 Selection of Target Oases

(1) Principles for selecting Oases

The oases where the tests of the Pilot projects will be carried out are selected on the basis of the criteria stated below. These criteria are based on the following ideas. The implementation of the projects proposed in the Action Plan in the form of testing and examining the possibility as a model of oasis development in the study area. In the selection, the emphasis was on the use of existing organizations and the potential as a basis for extension or the diversity of the access situation.

(2) Criteria for the Selection

The oasis selected for the testing of the pilot projects were drawn from the 41¹ oases with AGPO among the 117 identified by the study inventory conducted by the previous study of JICA in the two regions of the study. The 6 selection criteria described in table 6.1.5 was considered. It was adopted to select an oasis consisting of central and local oasis surrounding the central oasis. In doing so, two oasis areas were selected in each region. However, following discussions with SECF and PDDO, oases where PDDO conducts the pilot agricultural experiments (agricultural testing and installation of demonstration farms) have been ruled out².

Table 6.1.5 Criteria for the Selection of Oasis for the Realization of Pilot Project

<ol style="list-style-type: none">1) The AGPO is functional: the state of functionality of the AGPO was verified on the basis of the assessment conducted in 2004 by IFAD and with further investigation by the study.2) The women's co-operatives or active women groups exist within the AGPO: This item has been verified on the basis of further investigation by the team.3) There is a potential for agricultural production (availability of water resources, an adequate water quality, or existence of experience in vegetable gardening): This item has been verified from the study inventory of the previous JICA study and further investigation by the team.4) There is a potential as a centre of the area (close relationship with the neighboring oases or existence of a medical facility): This item has been verified from the study inventory of the previous JICA study and further investigation.5) The access is relatively easy: This item has been verified on the basis of time required by car between the area and the capital of the region.6) An oasis untargeted by the PDDO for its experience in agriculture.
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(3) Result of the Selection

As shown in Table 6.3.2, each entry was evaluated following 3 levels and the oases that received a bad grade for more than one category has been eliminated. As a result, 6 oases of Adrar and 5 oases of Tagant were selected (Refer to Figures 6.3.1 and 6.3.2).

During the final selection, as shown in Table 6.3.2, the adaptability of the model has been taken into account in addition to the geographical conditions, the field study and the interview survey to determine the target oases.

¹ There are AGPO that gather several oases (we do not then have one AGPO per Oasis). This suggests that the number of oases with an AGPO can be greater than the total number of AGPO. According to the inventory, there are 41 oases with an AGPO but that number rises to 47 according to our survey. Based on discussions with the SECF and PDDO, oases where agricultural pilot projects will be conducted by the PDDO have been excluded from this study to avoid additional burdens to the people because of duplication of efforts and not create confusion by performing similar activities in the same oasis.

² Following the discussion with the SECF and PDDO, oases where PDDO will carry out agricultural tests were rejected in order to avoid duplication of intervention and not to increase the burden on residents.

Table 6.1.6 Characteristics of the Model Oasis and Final Evaluation

Wilaya	Oasis	Adaptability	Final Evaluation
Adrar	Chingueti	No oasis with AGPO nearby. The validation activities by the point of view of the extension is impossible.	△
	Taryouvet	Being surrounded by the oases, it is good from the point of view of the extension of the activities to other oases. But lying near the administrative centre where access is too easy, it cannot be a model for other oases.	△
	M'haireth	In addition to the other oases around including an oasis (Fares) which shares the same AGPO and is located just near by, it is appropriate to test the possibility of technical extension. In addition, the upgrading of the rural road being done by the EU, it is possible to make a comparison of before and after construction of that road	⊙
	Loudy	These 3 oases being located in the same area, which has many nearby oases, it is pertinent to conduct the tests. Among them, the AGPO of Tirebane is considered good, and the activities of organizations are numerous.	○
	Tirebane		⊙
	EI Maaden		○
Tagant	Lehoueit att	Divided inside the oasis, the intervention is not easy.	○
	Nimlane	Located on the main road, it has the characteristic of a semi-urban area	○
	Ederrou m	There are few nearby oases	△
	N'batt	Having beside another oasis (Aglembit), validating effect of propagation is possible. And with 7 quarters inside the oasis, it can be a model for the extension inside the oasis.	⊙
	N'Titam	The oases are distributed to its proximity. And the AGPO is good and the activities are numerous and active. There is a regular taxi, which connects it to the main road.	⊙

Table 6.1.7 shows the oases that are finally selected.

Table 6.1.7 Selected Oases

Wilaya	Moughataa	Oasis
Adrar	Aoujeft	M'Hairett
	Aoujeft	Tirabane
Tagant	Moudjeria	N'Titam
	Tidjikja	N'Bat

(4) Actual Situation of the Selected Oases

The areas selected for the Pilot projects are composed of 4 central oases and additional oases surrounding them. According to the inventory conducted by the previous study, the 4 central oases are classified as moderately large, based on the resident population. As it requires 1.5 hours to 2.5 hours drive from the capital of the region to get there,

they are fairly remote. They depend mainly on the cultivation of date palms or livestock and remittances made by the migrants gone to work in urban areas. The percentage of women in the population is higher than that of men, there are many female-headed households.

In addition to farming activities, women are mainly involved in the pastry or crafts in the women's cooperatives registered at the Delegation of MAE. They have acquired their skills through training with the Moroccan guests couples under the Oasis Project Phase II. According to the interview of the inhabitants, the needs of oasis linked to everyday life are: wells to provide safe water, the promotion of income-generating activities for the improvement of living standards, preservation of agricultural products or acquisition of means of transport for the promotion of agricultural activities, technical support for income-generating activities, strengthening of health services or construction of pharmacies. Strengthening the capacity of existing organizations to solve problems is also requested. On the basis of these considerations, it can be said that an integrated rural development is desired by the people.

Summary of selected oasis

(1) Tirabane

It's an oasis, which includes 3 villages scattered in an area of 15km² and distant of 1.5 km to 4km around a dune. There are women's cooperatives registered with the delegation of MDRE and informal groups of women in this oasis. Some of these organizations carry out activities such as the construction of shops with the support of AGPO. Although business is developing, information related to agriculture are still inadequate. The specialty of the department of Aoujeft being known as vegetable gardening, the women's organizations of Tirabane are eager to be trained on vegetable cultivation techniques.

(2) M'Haireth

It is an oasis surrounded by rocky hills, which was difficult to access prior to the construction of the rural road by the European Union in 2005. This oasis has jointly created a AGPO with the neighboring Fares oasis which is located 5km from the other side of the rocky hill. There are 4 villages at M'Haireth. Although registered men's cooperatives exist, no women's cooperative is registered. Women's groups have the experience of having been trained in agriculture, handicrafts, pastry or management of small business through the Oasis Project. The population of these two oases is approximately 2500 persons (according to our survey). Located along a wadi, fairly abundant water resources contribute to the production of good quality and quantity

dates. But the information is limited because of the difficulty in access, and people need information mainly on farming techniques (including that of livestock breeding). Despite the motivation, much remains to be done on the management of women's cooperatives, and they are eager to be trained in this area.

(3) N'Batt

Around this oasis, there are 4 large and small villages (oases) which are spaced about 5 to 10km. Despite a very high women population rate, amounting to 68%, the degree of cohesion among members of the cooperative is good because the representative of the group is a family member of the spiritual leader. Lacking health services and means of transport, the inhabitants of the area are forced to get a taxi to the main road with camels or carts pulled by donkeys for one day, or go to the capital of the region riding for 2 days on the backs of camels in the event of illness. In addition, agricultural activities have to be adapted to the scarcity of water resources in this oasis.

(4) N'Titam

Despite the existence of 8 large and small villages (oases) around the Central oasis, N'Titam has an access problem because of the rocky hills or dunes. The difficulty increases with the onset of water puddles during the rainy season. Situated downstream of the wadi that continues since N'Beika located on the main road, rain-fed cultivation of millet and other plants is relatively easy to practice with the residual surface water. In addition, the pumping of water is relatively easy thanks to the shallow wells of 5 to 7m deep. Even if water pools can be used for domestic use, its negative influence on health is not negligible.

Being an oasis of a nomadic tribe, the management of the oasis is provided by an AGPO created by the Oasis Project, in the absence of existence of a traditional leader.

(1) Tirabane



(2) M'Haireth



(3) N'Batt



(4) N'Titam



6.2 Execution and Results of the Pilot Projects

6.2.1 Schedule of Execution

(1) First Stage (January-March 2006)

Prior to the start of the pilot projects, the MCPFEF and the study team organized a general assembly in all selected oases to seek maximum participation from the residential beneficiaries. This meeting was held with the following objectives.

- To carry out an explanation for the people who are both beneficiaries and implementers of the activities on the direction and approach of the study with a view to achieving mutual understanding.
- To create a framework for discussions with the persons concerned or the beneficiaries for the implementation and success of the planned activities within the framework of this study.

Upon entering the hot season from the second stage, the activities of vegetable gardening and poultry farming were started by selecting the working groups among residents immediately after the general assembly. Regarding to vegetable gardening, the monitoring of the normal cultivation season and the preparation of the hot summer season crops were made in 3 oases: Tirabane, N'Batt and N'Titam. As for the poultry farming, demonstration cages were built in the oases of Tirabane, N'Titam and Lemguetah. The discussion with the people on the structure and contents of the activities, selection of AA / ASC, simple tests and preparation has been made at this stage for other activities.

At Tirabane where it has been conducted poultry farming activities, 10 households started their activities by the end of March.

(2) Second Stage (May-September 2006)

Upon entering the hot summer period, the verification of the extended period of vegetable gardening in the shade were initiated. As a result, it is confirmed that extending the cultivation period until July for eggplant and until the end of June for tomato is possible. However, as there was a portion of vegetables which was neglected on the field, a training was organized on the processing of vegetables or cooking not to reject them. As for the poultry farming, the egg production has straggled because of the heat. The number of chicken was declined in Lemguetah because of the stress and damage of move of members of poultry group from their homes during the rain season.

For the health and hygiene activities, "a participatory training on health issues and problems that exist in the oasis" and a "training on IEC on the topics to support women and gender for 11 candidates auxiliary midwives (AA) were carried out. The AA were trained at the "Ecole Nationale de la Santé (National Health School)" after acknowledging health problems themselves and the role that they have to play after the training.

Regarding to the income-generating activities and support for women's organizations, training on the issues of organization and management, support for developing the activity planning and the consideration and sensitization to the gender aspects to staffs of the Regional Coordination and AVB were conducted around mid-June. In addition, the training on manual sewing and production of compost (the members of group of vegetable gardening, that have already learned and practiced the preparation of compost, have taught other members) was conducted from late June to mid-July.

A training on gender for people involved at the regional level has been performed as a support program on gender and capacity development of the member staff of MCPFEF. Beside, a gender related training was performed on regional staffs of MCPFEF and AVB who are directly supporting the residents of oasis so that they can pay attention to gender issues while their organization and technical supporting activities. Furthermore, a training on the methods of sensitization and extension for AA / ASC was performed.

(3) First half of the third stage (October 2006-March 2007)

The activities of vegetable gardening were started with 3 groups of women from October 2006. A workshop was held in December with the video images of cultivation manuals in order to transfer technology to other groups of the supervised oases. The exchange of information on vegetable gardening among women's groups

became denser.

The number of households practicing poultry farming at Tirabane has risen to 18 in January 2007. Having watched (or heard) the success of the activities at Tirabane, a group of women at M'Haireth asked a technical support to the Study Team. The demonstrations were performed at M'Haireth in Adrar and at N'Drew in Tagant during the same month.

After 6 months of training at the "Ecole Nationale de la Santé (National Health School)", 9 candidates among 11 have obtained their certificate of auxiliary midwives. A training of ASC and on IEC was carried out after the training of auxiliary midwives so that the same women can perform various assistant activities such as childbirth, local health, and sensitization. The AA / ASC launched activities in their respective oasis from January 2007.

Following the very strong request from women of M'Haireth and Tirabane, support for the dyeing activity was started from November 2007. As for the sewing activities, which were started during the second stage, a training on intermediate techniques and basic use of the sewing machine was performed. Moreover, since the women of Tirabane have requested a training on the method of construction of the cages necessary for the poultry farming, it was carried out in conjunction with the sewing activity. A workshop chaired by the AA / ASC for simplified problem analysis, which is related to women's activities, was organized as a part of the training on the management of women's organizations.

Those in charge of the support for the Regional Coordination were designated in the context of strengthening the operation of these departments. These staffs were required to verify the progress of activities of the Regional Coordination and pilot projects according to the number of monthly meetings based on the monthly reports prepared by the Regional Coordinator. Regarding to the support for gender aspects, the training on gender for the oases men and women and the training on the considerations of these aspects in sensitization and extension for AA / ASC were realized.

One year has passed since the beginning of the pilot projects, the mid-term evaluation of activities was carried out to understand the results or impacts on people from late January to beginning of February 2007.

(4) Second half of the third phase (May-December 2007)

It was confirmed by the mid-term evaluation that the activities had begun to yield results, and small improvements of the living conditions mainly among women had

begun to appear. On the other hand, the pilot projects handled by departments of several ministries were still covering many areas. Therefore, roles of each of these ministries for the implementation of the pilot projects and the Action Plan, and the practicability of the implementing body under the initiative (coordination) of MCPFEF are left as problems to discuss and resolve. In this context, the pilot projects were conducted under the initiative of MCPFEF during this phase, and the committee in charge of formulating the Action Plan, which examines the contents of the Plan and the effectiveness of the extension methods through seminars for the livelihood improvement, has been put in place.

6.2.2 Mid-Term Evaluation of the Pilot Projects

(1) Overview

A mid-term evaluation of the pilot projects was conducted from January 30 to February 6, 2007, one year after the beginning of the projects, in order to verify the results and impacts on the people and to review the activities for future program.

(2) Method

Questionnaires were prepared beforehand for this evaluation. A survey on impact of the activities (on the lives of people or the change of activities) and effects of the pilot projects on the people and the persons involved was conducted at the same time. This survey was mainly done by the AVB, the Regional Coordinators of MCPFEF, and the members of the Study Team with assistance from the regional staff of PDDO. The records of regular monitoring was used for quantitative data.

Interviewees and aims of the survey were shown in the following table.

Table 6.2.2.1 People Surveyed and Objectives of the Mid-Term Evaluation

Persons interviewed		aims and methods of survey
Women	Vegetable gardening: Women participants and non-participants to the activities	<ul style="list-style-type: none"> • Group discussion on the subjects of changes of food habits, effects brought by various introduced techniques, a degree of comprehension of water saving and challenges occurred (approximately 10 women in each oasis) . • Individual interview with women who are not participating. Investigation made on 5 women to verify effects of demonstrations.

Persons interviewed		aims and methods of survey
	Poultry farming : women involved in poultry farming activities	<ul style="list-style-type: none"> • Individual interview of 14 women on the issues of change in the food habits, the effects of various introduced techniques, self-consumption or marketing to the oasis of Tirabane where this practice is begun to extend to individual farmers. • Individual interview of 2 women from N'Titam, who began poultry breeding after visiting the demonstration cages, on issues of the food habits, the effects of various introduced techniques, self-consumption and marketing.
	AGR : Representatives of Women Cooperatives	<ul style="list-style-type: none"> • Group discussion with representatives of 12 cooperatives of Tirabane and 13 cooperatives of M'Haireth on the effects on life, self-consumption and marketing of products, or the situation involving the activities as a group. Discussion with the 3 groups of Fares took place separately.
Men	Husbands of women participating to the tests or trials	<ul style="list-style-type: none"> • Individual interview of 5 husbands in each oasis on the issues on behavioral change among women, understanding for women's activities, the situation of supports, expectations and the economy of water.
AGPO	Executive Members	<ul style="list-style-type: none"> • Individual interview of chairmen or vice-chairmen of the AGPO on the change in women's organizations, areas for improvement, the situation of the support of the AGPO for these organizations, or the possibility of support in the future or water saving.

(3) Results

The results of this evaluation can be summarized as follows:

Table 6.2.2.2 Summary of the Mid-Term Evaluation (1/3)

Situation during the mid-term evaluation	
Direct Benefits	<p>(1) Vegetable Gardening</p> <ul style="list-style-type: none"> • The 3 groups of women (95 persons in 3 oases, area of farm 5.900m²) are direct beneficiaries of the training. • 15 groups of women in the surrounding areas are indirect beneficiaries. • In all cases, the self consumption of vegetables has been doubled and a small portion is sold.
	<p>(2) Poultry Farming</p> <ul style="list-style-type: none"> • The Groups of poultry farming demonstration are the direct beneficiaries (2 groups of 2 oases for the first year and 2 other groups in the two oases were added in the second year). • The representatives of women groups of small oases being included in the groups, 27 groups of 3 oases benefit indirectly. • Starting with a single cage of demonstration, the event was expanded to more than 20 in Tirabane, 3 in M'Haireth, 4 in Lemguetah. • People have begun to consume eggs (92% Tirabane) and meat (78% Tirabane) and marketing (1000-2500 Ouguiyas per bird).
	<p>(3) Health</p> <ul style="list-style-type: none"> • 11 AA / ASC were trained in the small oases. Because they will take care of the medical service in their respective oasis, the residents of the oasis are the direct and indirect beneficiaries. • Equipments of 4 health posts were built under the grant of the Japanese Embassy and the fund of the JICA office in Senegal.
	<p>(4) Support for income-generating activities / management of Women's Organizations</p> <ul style="list-style-type: none"> • All people (men and women) are concerned with the support for income-generating activities. About 300 people from 2 oasis participated in the training. • 25 women's organizations of 2 oasis participated in the training on the management of women's organizations. • 7 groups have begun to market their dyeing and sewing products using techniques learned through the training.

Situation during the mid-term evaluation	
	<p>(5) Strengthening the administrative extension system</p> <p>1) Strengthening the capacity of SECF.</p> <ul style="list-style-type: none"> • The reinforcement is essentially concerned with the Regional Coordination. The basic functions are managed through the provision of equipments and the strengthening of the capacity of reports writing. • The relationship between the central and regional levels of SECF becomes denser through the pilot projects. • Proposals for small projects developed by the Regional Coordination are beginning to take form. • The Regional Coordinations have 2 more people since 2007 and the budget was increased (even if the amount is insignificant). <p>2) Staff training and administrative support</p> <ul style="list-style-type: none"> • The support activities of the agricultural sector are carried out with the assistance of 3 AVB. • The AA / ASC are trained in the health sector with the support from the National Health School and the MSAS. Integrated into the MSAS system, 9 AA / ASC who received their certificate will perform the activities. • In the field of AGR, support activities are carried out with the support from people in charge of the organizations of MDR, AVBs, SECF staff and trainers of the vocational training centre. • At the regional level, the representatives of regional offices (SECF, MSAS, MDR, PDDO, PDRC and the AGPO union) and the presidents of the AGPO in the supervised oases were trained in the gender aspect

Table 6.5.2 Summary of the Mid-Term Evaluation (2/3)

Situation during the mid-term evaluation	
Mid-term Evaluation	<p>o Amelioration Techniques</p> <p>(1) Vegetable Gardening</p> <ul style="list-style-type: none"> • By providing shade, even oases women were able to extend the cultivation period (tomato and eggplant). • The benefits of preparing nurseries such as resistant nurseries, water and effort saving have been understood by many women groups. • The women groups have confirmed the effectiveness of the ridging technique to water economy and good growth in the area where irrigation is done manually. • Irrigation of 10mm compared to 30mm-50mm conducted daily currently does not have an impact on growth. • If we examine the piezometric fluctuation of the wells in the farm and the crop calendar, we can avoid the problem of water scarcity at harvest advancing 1-2months the period of cultivation in relation to that usually practiced. However, advancing the period means that the crops will grow in the high temperatures, it is necessary to take measures against heat as shading or the management of nurseries. • The people who had no experience of cultivating cabbages and eggplants have integrated these vegetables in their eating habits. • The eggplant is grown extensively and some of the production is left to rot in some of the supervised oases, the transfer of drying techniques for conservation was carried out. <p>(2) Poultry Breeding</p> <ul style="list-style-type: none"> • The survey team has taught improved techniques of windbreak against the hot winds, egg laying room in stone, chicken wire cage, cage for chicks and supply of bone powder meal. People use other materials due to the unavailability of chicken wire locally and have realized the importance of fencing to protect the birds against predators. • The eggs were eaten some times by adults. However, the sense of feeding bone powder meal is not well understood by the people (which is supplementing calcium). One must also solve the problem of fuel to burn the bones. • The damage by predators and hot winds can be reduced by applying the techniques mentioned above. • These techniques and equipment including alternative ones are easy to learn or acquire with the people, the possibility of expansion is much higher if we manage to motivate people.

Situation during the mid-term evaluation	
	<p>(3) Health</p> <ul style="list-style-type: none"> • Women selected from the inhabitants were able to acquire skills and knowledge as AA / ASC. • These women already attend many deliveries.
	<p>(4) Support for income-generating activities / management of Women's Organizations</p> <ul style="list-style-type: none"> • As part of the support for income-generating activities, women have shown high interest in dyeing and sewing. Thus, the event was expanded for a small-scale market and use in households. • By strengthening the management of women's organizations, the number of registered cooperatives at Tirabane which was 4 out of 13 and 0 at M'Haireth in June 2006 became 13 cooperatives at Tirabane and 9 at M'Haireth (and the procedure for approval of 3 others is underway) in December 2006.

Table 6.5.2 Summary of the Mid-Term Evaluation (3/3)

Situation during the mid-term evaluation	
Mid-term Evaluation	<p>(5) Strengthening the capacity of SECF</p> <ul style="list-style-type: none"> • Though it is a recent ministry, as the SECF has already experience in staff training, it is necessary to examine the use of the existing contracted staff and female leaders already trained in the past or the training of the resident facilitators. • We must continue strengthening the capacity of the staff of the Regional Coordination in the field of participatory methods in community development, in the problems related to each development issue or on the job training.
	<p>○ Situation of Extension</p> <ul style="list-style-type: none"> • It was confirmed through the communication of information and technology from the reference oases to the surrounding oases. • It was confirmed that the information and techniques are communicated between organizations and individuals through the women's organizations. The information is expanded more quickly in the oasis of Tirabane where there is a women's cooperatives union. We need to proceed for the validation of the extension between farmers. • Poultry farming has been started with a demonstration cage and has been expanded to more than 20 farmers on the own effort of Tirabane residents. It is necessary to validate the possibility of extension through the exchange between the people in similar oasis. • The manual is used by the residents. • Although the possibility of extension between the inhabitants of the oases and surrounding the reference oases is confirmed, it is necessary to examine the methods of extension to other areas. • It is necessary to consider the coordination with the PDDO and PDRC.
	<p>○ Improvement of living conditions / rural development</p> <ul style="list-style-type: none"> • The merits of women / women's organizations being welcomed by the men, the study begin to see the contribution of women to household wealth and labor. • Seeking activities related to the diet, health and generation of income that are of interest to women, the possibility of development for the improvement within the household in rural development is reported. This is seen in the reorganization of women's group in the oases. • The activities of dyeing and sewing which can benefit the households in the short term should be regarded as core activities.
Activities for the completion of the Action Plan	<p>○ Extension</p> <ul style="list-style-type: none"> • The extension activities by the administration are essential in the Wilayas. The team focused on activities in the reference or core oases in the pilot projects, but it is necessary to validate the possibility of extension executed through the support of the administration in the final year of the study. • A support at reduced cost as well as activities undertaken under the initiative of the people are essential in this remote and landlocked environment. It is necessary to confirm these possibilities. <p>○ Strengthening the administrative system</p> <p>1) Strengthening the capacity of SECF.</p> <ul style="list-style-type: none"> • The strengthening essentially concerned the Regional Coordination. The basic functions are

Situation during the mid-term evaluation	
	<p>managed through the provision of equipments and strengthening the capacity in reports writing.</p> <ul style="list-style-type: none"> • As for the concrete support in the oases by the staff of the Regional Coordination, it is necessary to strengthen their capacity through on-the-job training, as they still depend on the central level. • It is necessary to clarify the agency in charge of implementing the Action Plan and the role of the MCPFEF in the framework of that Plan. <p>2) Staff training and administrative support</p> <ul style="list-style-type: none"> • The participation of the people and organizations of people in extension activities is vital to the extension system in the oases. We must therefore consider the possibility of training residents facilitators who will be in charge of this mission and the method of intervention of the administrative support.

(4) Review of the final year activities from the view point of support for women

Pilot projects focused on agriculture, health, income generation and support for women's organizations have been carried out until the mid-term review. Despite the results obtained by sector, the need to put in order the overall idea of a plan of action to provide support for women and to clarify the roles of the departments concerned (MCPFEF and others) while identifying the organization in charge of coordination have been reported.

Thus, the review of the structure of implementation of the Action Plan to support women under the initiative of the MCPFEF was made along with the reorganization of the pilot projects from the view point of supporting women on the year 2007, which is the final year of this study.

- 1) Execute on an integrated manner the improvement of the techniques related to living conditions (dyeing, cooking, home improvement or education on nutrition) for the women in charge of managing the household along with the techniques of vegetable production and poultry farming.
- 2) Train AA / ASC able to conduct activities to support women in addition to their activities related to local health as local women's leaders.
- 3) The MCPFEF holds seminars for the livelihood improvement (on production techniques or life, and sensitization on the gender aspect), receiving technical assistance from the MAE and the MS.

Table 6.2.2.3 Sorting out the Pilot projects for Women Supporting

Before Mid-Term Evaluation	After Mid-Term Evaluation
【 Programmes supporting women 】	【 Programmes supporting women 】
1. Agricultural Programme	Improvement of production techniques
Extension of vegetable production techniques	Extension of vegetable production techniques
Extension of poultry farming techniques	Extension of poultry farming techniques
2. Programme supporting organizations in income generating activities	Improvement of living techniques and groups training

Before Mid-Term Evaluation	After Mid-Term Evaluation
Income generating activities	Dyeing, Handcrafts, vegetables processing to improve living techniques
Groups training	Supporting groups training (Leaders training and strengthening of members capacities)
3. Programme improving health and hygiene	Health improvement and support for women
Training of auxiliary midwives	Training of AA/ASC and local health activities
Training of community health staffs	Support activities for women by AA/ASC as leaders
4. Strengthening the administrative extension system	Strengthening the administrative extension system to support women
Strengthening the capacities of the MCPFEF	Strengthening the capacities to organize seminars for the improvement of living conditions, Sensitization and Extension (IEC)
Training of Extension Staffs	Training facilitators and support to the training of women groups

6.2.3 Results of Pilot Projects

(1) Vulgarization of the Agriculture Techniques

1) Improvement of Vegetable Cultivation Techniques

i) Background and Object

The increasing of vegetable productions using introduced useful techniques such as ridging, shading and compost making were identified in Phase 1 Study. Activities of phase 2 study aimed at the contributions for the livelihood improvements and nutrition conditions by the acquisition of fresh vegetables and increasing vegetable productions mainly targeted on women's groups of the oases.

ii) Situation of the activites

a) Tagrget group

Oases conducting the pilot project of vegetable cultivations were in 3 locations: N'Batt, N'Titam and Tirabane. Respective women's groups were selected with selection criteria of: the groups shall be a member of AGPO; the groups shall have demonstration farm; the location of the farms shall be good for demonstration; the willingness of the groups shall be high; and the groups shall have some experience of cultivations. The conditions of operational farm and cultivation activities of women's groups participated for the pilot project are shown in table6.2.3.(1)2(end of this chapter).

b) Target group

Through the pilot projects for vegetable cultivation, following techniques have been instructed (see Table 6.2.3.(1)2). The targets are extension workers participated in the program and the members of 3 women's groups. The

technical instructions of the vegetable cultivations to women's groups have been basically conducted by extension workers assigned as technical instructor. The cultivations were started from February 2006 as introductory trial and conducted as normal and summer season cultivations. Normal season cultivation start from autumn in 2006.

Table 6.2.3.(1)2 Items of Technical Transfer on the Vegetable Cultivation

Activities Item		Contents of Instruction
Vegetable Cultivation	Ridging	Shaping method of ridges rather bigger than previous size, amount of fertilization, irrigation method
	Production of seedlings	Seedling design, preparation of seedling pots, seeding method, amount of fertilization, irrigation method, relocation of seedlings, thinning, re-use of thinned seedlings
	Transplantation of seedlings	Transplantation methods of seedlings, handling of seedlings, management of seedlings after transplantation
	Managements of vegetables on farm	Installation of shadings and suitable transmittancy, irrigation method, top dressings, disease and insect control by natural chemicals and by hands, training, disbudding
	Basket cultivation	Fertilization, installation, transplantation, water management
Compost making		Size of compost hole, usable resource and their input balance
How to state on account book		Items to be noted, statement methods, measuring methods of products

The overview of the activities executed by vegetable cultivation in the pilot project is shown in table 6.2.3.(1).3 below.

Table 6.2.3.(1).3 Overviews of Vegetable Cultivation in the Pilot Project

Year	Cultivation		Season	Target Area	Implementation Condition
2006	Normal cultivation (2005)	Normal / Summer Continuous Cultivation (2006)	From Feb. to Jul. 2006	N'Batt N'Titam Tirabane	Implementation as introductory trials due to delay of normal season cultivation. The trials were continued to summer season for identifying the possibility for summer season cultivation.
	Summer cultivation (2006)				
	Normal season cultivation (2007)		From Aug. 2006 to May 2007	N'Batt N'Titam Tirabane	Implementation under the instruction of extension workers. Technical transfer to extension workers and women's groups. Finding problems. Photo shooting for preparation of the manuals.

Year	Cultivation	Season	Target Area	Implementation Condition
2007	Summer season cultivation (2007)	From Jan. 2007 to Aug. 2007	N'Batt Tirabane	Implementation under the instruction of extension workers. Technical transfer to extension workers and women's groups. Finding problems. Confirmation of transferred techniques. Reflection of issues identified to the manuals. Photo shooting for preparation of manual. Identification of technical problems for the cultivation in summer season.
2008				
	Normal season cultivation (2008)	From Aug. 2007	N'Batt N'Titam Tirabane	Implementation under the initiatives of the instruction of extension workers. Operation of the manuals.

iii) Situation of the activities

Normal / Summer Continuous Cultivation in 2006

The Pilot projects for normal/summer season continuous cultivation started from February 2006 as demonstration trials after selection of respective women's groups cooperating in 3 oases. In the demonstration trials, the cultivations were conducted focusing on enhancing the interests of the local people and considering the extension of cultivation periods during hot season. Therefore the demonstrations were conducted with tomatoes and eggplant.

Table6.2.3.(1).4 Activities of Normal Summer Continuous Cultivation in 2006

Oasis	Condition in Cultivation
N'Batt	Cultivation trials of eggplants (cultivar: Black Beauty) and tomatoes (cultivar: Roma). The atrophied symptoms on leaves were observed on most of tomatoes. Insects and disease attacks were recognized on some of eggplants but no symptom for heat attack were recognized in appearance.
N'Titam	The group farm was transferred on March due to the problems of soil. On transferring the farm, participants tried to transplant all of seedlings. But all seedlings have died and the cultivation was terminated. Some of group members continued to cultivate only onions privately.
Tirabane	Cultivation trials of eggplants (cultivar: Black Beauty) and tomatoes (cultivar: Roma & Xina). It was identified that Xina cultivars were stronger than Roma against heat. Insects and disease attacks were recognized on some of eggplants but no symptom for heat attack were recognized in appearance.

Source: JICA Study Team

In Tirabane, monthly production data was collected by accountant of women's group in cooperation of AGPO president. The cultivations in summer season were completed by 31st of July. On the other hands, there were lacks of data recordings of productions in N'Batt because the extension worker could not instruct how to record the data and as the results, there was no person to be able to record properly. In N'Titam, there was no production on new farm due to damage on all seedlings during transfer from

previous cultivation.

The results in Tirabane were summarized in Table 6.2.3.(1).5 and 6.2.3.(1).6. The yields of tomatoes were 10.8 kg/10m², eggplants were 10.8kg/10m² and carrots were 10.0kg/10 m². The harvesting periods of these vegetables starts from beginning of July (tomato), the end of July (eggplant) and the beginning of June (carrot). According to the results, it is identified that the cultivations of major crops such as tomatoes, eggplants and carrots were possible to continue in June and July during summer season. Moreover, as the prices of these vegetables in this season tend to increase, it is possible to gain high incomes compared with normal cultivation season in case they produce the products for sale (refer to Table 6.2.3(1).5).

Table 6.2.3.(1).5 Harvesting Periods of Major Crops in Tirabane (2006)

	Mar	Apr	May	Jun	Jul	Aug
Tomato						
Eggplant						
Onion	Cultivation canceled due to lack of irrigation water					
Carrot						

Table 6.2.3.(1).6 Yield of Vegetables in Tirabane (2006)

Vegetable	Production Total	Cultivated Area	Yield
	kg	m ²	kg/10m ²
Tomato	99	91	10.82
Eggplant ^{*1}	65	180 (60)	10.88
Onion ^{*1}	0	118	0.00
Carrot ^{*2}	358	357	10.03

*1: According to the interview, plenty of areas for eggplant cultivation were canceled due to the lack of irrigation water in summer season. The harvested areas were estimated about one third of cropped area. The cultivation of onions was also stopped completely by the same reason.

*2: The production of carrots includes leaves and roots.

Normal Season Cultivation in 2006

Normal season cultivations in 2006 started from September 2006 on schedule. The activities of the farms were implemented on the initiatives of women's group and supervision of the extension worker. The daily supports were conducted under the instructions of extension workers.

The initial settings of cultivations in each farm were designed as in the following table and the farm designs were set up as shown figure 6.2.3.(1).2 In addition, it is necessary to change the irrigation amounts depending on the weather conditions. The irrigation amounts were managed with the judgment by extension workers in case the shortage of irrigations were identified.

Table 6.2.3.(1).7 Initial Setting of Cultivations

Vegetable	Variety	N'Batt		N'Titam		Tirabane	
		Plowing	Irrigation	Plowing	Irrigation	Plowing	Irrigation
Tomato	Roma	Ridging	20mm/day	Ridging	20mm/day	Basin	Depending on traditional methods. Every 5day irrigation by pumping.
Eggplant	Black Beauty	Ridging	20mm/day	Ridging	20mm/day	Basin	
Cabbage	Marché de Copenhagen	Ridging	20mm/day	Ridging	20mm/day	Basin	
Onion	Texas Grano	Basin	20mm/day	Basin	10mm/day	Basin	
Carrot	Nantaises	Basin	11mm/day	Basin	10mm/day	Basin	

Seedlings of tomatoes, eggplants and cabbages were produced in nurseries and transplanted on the fields. Seedlings of onions are produced on the field and transplanted. Carrots are sowed directly by drilling. Size of ridges was 1m x 3m. The size of basin beds was 2m x 3m in N'Titam and Tirabane, and 1m x 3m in N'Batt. The soil in Tirebane is sands, so the basin beds were introduced due to the difficulty to maintain the forms of ridges. The irrigation amounts were occasionally adjusted based on the field conditions. The values of irrigation above mentioned were at December 2006.

In the normal season cultivation in 2006, the cultivation trials of 5 vegetables were selected and conducted. The cultivation trainings were conducted based on the instruction of technical items to be transferred and the periods of harvestings, yields and expected incomes were also observed. The cropping calendar and the result of vegetable productions are shown in table 6.2.3.(1).8 and table 6.2.3.(1).9, respectively.

Table 6.2.3.(1).8 Productions in Normal Season Cultivation in 2006

Oasis		Unit	Tomato	Eggplant	Cabbage	Onion	Carrot	
N'Batt	Cultivated Area	m ²	15	15	15	18	18	
	Production	kg	38.25	109.84	44.20	36.25	16.00	
	Yield	Net cropped area	kg/10m ²	25.50	73.23	29.47	20.14	8.89
		With border area	kg/10m ²	14.57	41.84	16.84	13.81	6.10
N'Titam	Cultivated Area	m ²	9	15	15	18	18	
	Production	kg	23.65	101.77	28.00	24.20	38.25	
	Yield	Net cropped area	kg/10m ²	26.28	67.85	18.67	13.44	21.25
		With border area	kg/10m ²	15.02	38.77	10.67	9.22	14.57
Tirabane	Cultivated Area	m ²	26	18	6	12	24	
	Production	kg	108.60	43.50	3.00	5.20	32.73	
	Yield	Net cropped area	kg/10m ²	41.77	24.17	5.00	4.33	13.64
		With border area	kg/10m ²	28.64	16.57	3.43	2.97	9.35

In the results of yields, "Net cropped area" shows the yield only in cultivated area, and "With border area" shows the yield including border area surrounding.

In general, the yield of "Net cropped area" is applied as general indicator in Mauritania.

The table 6.2.3(1).10 shows the comparison of the production in normal season cultivation 2006 in comparison with phase 1 study.

Table 6.2.3(1).10 Comparison of the Production in Normal Season Cultivation 2006 in Comparison with Previous JICA Study

vegetable : tomate	present study				
Oasis	Tirabane	N'Batt	N'Titam	Tirabane	MAE ¹⁾
Irrigation method	Basin	Drum and horse pipe	Watering can	Basin	—
Cultivation method	Ameliolo	Improved	Ameliolo	Traditional	Traditional
Period of cultivation	winter 2006	Winter 2006	Winter 2006	Winter 2005	Winter
Rendement kg/10m ²	41,7	25,5	26,3	8,6	8

vegetable : tomate	Phse 1 study				
Oasis	Tenllaba	Tidjikja	Nimlane	Tenllabe	Tidjikja
Irrigation method	Drip Irrigation	Watering Can	Watering Can	Basin	Basin
Cultivation method	Improved	Improved	Improved	Traditional	Traditional
Period of cultivation	Winter	Winter	Winter	Winter	Winter
Rendement kg/10m ²	53	27	24	5	3

vegetable: eggplant	present study				
Oasis	Tirabane	N'Batt	N'Titam		MAE ¹⁾
Irrigation method	Basin	Drum and horse pipe	Watering Can		—
Cultivation method	Improved	Improved	Improved		Traditional
Period of cultivation	Winter 2006	Winter 2006	Winter 2006		Winter
Rendement kg/10m ²	24,1	71,2	67,8		15

vegetable: eggplant	Phse 1 study				
Oasis	Tenllaba	Tidjikja	Nimlane-1	Nimlane-2	Tidjikja
Irrigation method	Drip Irrigation	Watering Can	Watering Can	Basin	Basin
Cultivation method	Improved	Improved	Improved	Improved	Traditional
Period of cultivation	Winter	Winter	Winter	Winter	Winter
Rendement kg/10m ²	37	86	58	21	3

vegetable : carrot	present study				
Oasis	Tirabane	N'Batt	N'Titam		MAE ¹⁾
Irrigation method	Basin	Drum and horse pipe	Watering Can		—
Cultivation method	Improved	Improved	Improved		Traditional
Period of cultivation	Winter 2006	Winter 2006	Winter 2006		Winter
Rendement kg/10m ²	13,6	8,9	21,2		15

vegetable : carrot	Phse 1 study				
Oasis	Nimlane-1	Nimlane-2	Tidjikja		
Irrigation method	Improved	Improved	Basin		
Cultivation method	Improved	Improved	Traditional		
Period of cultivation	Winter	Winter	Winter		
Rendement kg/10m ²	58	21	3		

Note :1) is the average value of Tagant data collected by the Department of Agriculture's MAE

The activities of Nimelane-1 of the previous study of JICA were conducted by the survey team, and those of Nimlane 2 by a group of women.

The culture of winter 2005 is the result of culture obtained by the cooperative women who worked with the team prior to the arrival of the study.

Yields of this and the previous study were obtained with the actual size of culture.

Even if one can not compare crop yields in winter 2006 of the current study and those of the previous study by the JICA (between 2001 and 2004), because of different circumstances, speculation, places or year, we can highlight the following points.

Tomato

In the normal season cultivation in 2006, the yield in Tirabane was achieved almost double (41.7kg/m^2) compare to other 2 oases. The main reason is expected that seedling raising were delayed in N'Titam and the harvesting period was short in N'Titam. However, those yields in N'Batt and N'Titam were similar values of the yields in Tidjikja and Nimulane-1 on the Phase 1 Study. Comparing the yield (10.8kg/m^2) of the normal season cultivation in 2005 conducted with traditional methods in Tirabane, the yield by using improved methods was about 5 times higher.

Eggplant

The yields of eggplants at 2 oases in Tagant were achieved more than 2 times higher than the yield at Tirabane in Adrar (N'Batt 61kg/m^2 , N'Titam 67.8kg/m^2). One of the important reasons of these differences are expected due to the shortness of cultivation experience of the women's groups in Tagant. In Tirabane, they kept the fruits till it becomes big. On the other hand, women's groups in Tagant have experiences of eggplant cultivations and they harvested, sold and/or consumed the products on appropriate periods.

Cabbage

The yields in N'Batt and N'Titam are 29.4 kg/m^2 and 18.6 kg/m^2 , respectively and show good results. But the yield (5.0kg/m^2) in Tirabane was low. It was expected that the main reason was the improper irrigation managements. In Tirabane, the water was irrigated using pump and they increased irrigation amounts according to the increasing temperature. However, sometime the luck of water occurred and also the fields were located at the end of fields, therefore the water could not reach the fields properly.

Onion

The result of the yields of onions showed similar as that of cabbages. The yield in Tirabane was low (4.3kg/m^2) compared with the results in N'Batt and N'Titam (20.1 kg/m^2 and 13.4kg/m^2 , respectively). Main reason was expected improper management of irrigation as in the case of cabbage cultivations.

Carrot

The yield of carrot in N'Titam was 21.2kg/m^2 . And the results in N'Batt and Tirabane were 8.9kg/m^2 and 13.6kg/m^2 , respectively, which were similar levels with the traditional cultivation method. In those 2 oases, it is identified that there were bad germination.

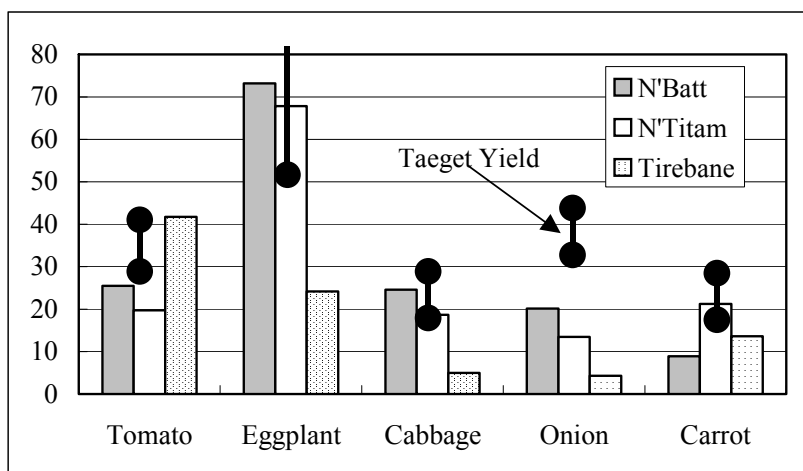


Figure 6.2.3.(1).4 Comparison of the Yields of the Pilot Project and CNRADA Assisted Field

The cultivations in the Pilot projects were conducted based on the utilizations of resources available in locals. Thereinafter, the results were compared roughly with the targets yields, which were described in the manuals from CNRADA. The yields of tomato, eggplant, carrot and cabbage were almost reached to the target yields; however the yield of onion was rather lower. Considering the data of CNRADA being premised on using fertilizers and chemicals, the results of the Pilot projects showed the high possibilities to obtain considerable yields using only resources available in oasis.

There were some differences in productions and yields at each Pilot projects oasis. These results were caused by various factors such as outbreaks of insects and diseases, irrigation management on the growing stages and the delay of transplantation periods. However, the expected ranges of yields are estimated based on the results in table 6.2.3.(1).11.

table 6.2.3.(1).11 Expected Ranges of Yields in Oases

Vegetable	Unit	Yield		Vegetable	Unit	Yield	
		Net cropped area	With border area			Net cropped area	With border area
Tomato	kg/10m ²	20-40	15-25	Onion	kg/10m ²	15-20	10-15
Eggplant	kg/10m ²	25-60	15-40	Carrot	kg/10m ²	10-20	5-15
Cabbage	kg/10m ²	15-25	10-25	The value of carrot only root weight.			

The yields were shown as the values of kg/10m² because the target groups were women's group cultivating in small-scale farms.

Summer Season Cultivation in 2007

The summer season cultivations were conducted at N'Batt and Tirabane. The cultivation schedule is shown as table 6.2.3.(1).11

Table 6.2.3.(1).12 Cultivation Schedule of Summer Season in 2007

		Ridging	Seedling raising	Trans-plantation	Date of last harvesting	Condition in cultivation period
N'Batt	Tomato	Mid. Jan	Mid. Jan	18/Mar	7/Jul	Damage by diseases
	Eggplant	Mid. Jan	Mid. Jan	4/May	7/Jul	Eating damage by animals
Tirabane	Tomato	22/Feb	21/Dec	21/Feb	1/Jun	Damages by diseases due to hot winds, shortage of water
	Eggplant	22/Feb	21/Dec	21/Feb	22/Jun	Eating damage by animals, shortage of water

In N'Batt, the vegetables were growing healthy at the initial stage of cultivation. The yield of tomatoes was 25.3kg/10m² being equal to the yield of normal season cultivation. The yield of eggplants was 13.5kg/10m² rather lower than the yield of normal season cultivation. Main reason of low yields of eggplants was the abandon of cultivation at harvesting period due to damages caused by animal invading the farm.

At Tirebane, both of tomatoes and eggplants were growing healthy at the initial stage of cultivations. However, the disease outbreaks (mites) caused by hot wind peculiar to dry lands and water shortage were occurred on the tomato plants and could not recover. The cultivations were stopped after the last harvest on the 1st of June. The eggplants were growing healthy until the end of June, but all plants were eaten by animals invading the farm and as a result the production were almost nill. The eggplants had grown healthy till the damage caused by animals. The results of productions are shown in table 6.2.3.(1) 13.

Table 6.2.3.(1) 13 Production Results of Summer Season Cultivation in 2007

Oasis	Item	Unit	Tomato	Eggplant	
N'Batt	Cultivated area	m ²	9.8	9.8	
	Production	kg	25.30	13.55	
	Yield	Net cropped area	25.82	13.83	13.8
		With border area	17.70	9.48	8.64
Tirabane	Cultivated area	m ²	18	18	
	Production	kg	10.80	1.25	
	Yield	Net cropped area	6.00	0.69	0.69
		With border area	4.11	0.48	0.48

The results showed that the yields in N'Batt were higher than those in Tirebale. It was expected that one of the reasons was the different condition of shadings. As shown in the table, the solar radiation in Mauritania is reached to more than 100,000 flux in summer season. In Tirebane, the average transmittancy by shading was about 20% while the value in N'Batt was 53%. This discrepancy was generated from the use of different materials for shading.

Table6.2.3.(1).14 Effect of Shading

		Tirabane	N'Batt
Outside	Lux	102,000	108,900
Time		14:00	12:00
In shading area	Lux	16,000	7,700
		85,000	11,800
		53,000	21,000
		89,000	45,000
		48,000	-
45,000	-		
Average percolation	Lux	56,000	21,375
Average Transmittancy	%	54.9	19.6

Through the cultivations in summer season in 2007, it is identified that the cultivation period could extend at least

for 2 months. It is also suggested that following considerations will be necessary to conduct proper cultivations in summer season.

- Shading has important effect in escaping strong sunshine during summer season. The cultivations under dates palm trees and/or the installation of shading is useful.
- The occurrences of heat damages by hot wind are expected. Particularly, diseases caused by mites are most popular in Mauritania. Installations of windbreaks in addition to shadings are effective.
- Damaged plants should be removed as soon as possible. Measures should be taken to minimize the spread of infections to other plants.

Basket Cultivation

The basket cultivation was one of the trials for the method during summer season and it was conducted aiming to produce fresh vegetables even in small amounts using wasted water from houses in summer season. The basket cultivations were conducted in paralleled with summer season's cultivations. The materials used for baskets making were leaves of palms, used sacks and tires. The characteristics of materials for basket cultivation were as follows.

Table 6.2.3.(1).15 Characteristics of Materials for Baskets

	Merit	Demerit
Palm leaves	Available for free as wasted packing materials of fruits at the capital.	Difficult to use for long period, easily damage by ants, not available at local areas.
Sacks	Available at low rate	Durability problem.
used tire	Available for free at the capital and regional capital. Possible to use repeatedly	Difficult to transportation

The growing conditions of basket cultivation are shown in the following table and the cultivations could not give satisfactory products. However, in considering the evidences such as the survivals of eggplants until December through summer season in N'Titam and the cultivation was continued until early summer in Tirebane.

Also, satisfactory results could not be obtained as fundamental ideas in the sense that the utilization of waste water from houses and supply of fresh vegetables by cultivating near the houses is unrealistic. The main reasons are 1) the wasted waters (thick-soaped water) from houses have bad quality and not suitable for irrigation and 2) there are many cases of plant eaten by animals wondering around the residential area of oasis.

However, it is expected that the practical application will be possible with further modifications. For example, the improvement measures such as 1) implementation near houses surrounded by wire nets and stonewalls and farmland near houses to prevent damage from animals, 2) implementation at the places near wells where acquisition of clean water is possible, and 3) establishment of appropriate environments such as protection from winds and provision of shading.

v) Yield and amount of irrigation

In a traditional vegetable farming by women's group, it is observed that more than the necessary water is supplied to vegetable. The farmers believed that the decrease of yield is caused when the amount of water supplied is reduced, hence they supply water more than needed. However, even if water is supplied more than required on the sandy soil where the water holding capacity is poor, a lot of water just go down without being used by the crops.

In PP (irrigation trial plot in Tirabane), the trial was executed for the purpose of showing that the vegetable yield was able to be secured even if the amount of water supplied was reduced. The irrigation trial was set as not to be complicated so that women's group could carry out the trials easily and not giving too much water-stress on vegetables and avoid drastical yield decreasing. Yield and amount of water supplied are shown in Table 6.2.3.(1). 16 and 6.2.3.(1).17.

Table 6.2.3.(1).16 Yeild and Amout of Water Supplied for Main Crops

Tomate

Oasis	Plot	Cropping season	Irrigation method	Farming method	Yeild kg/m ²	Irrigation interval (days)	Total amount of water supplied m ³ /10m ²
Tirabane	Before study	2005 winter	Basin	Traditional	8.6	3~5	40.8
	Trial plot 1	2006 winter	Basin	Improved	42.8	3~5	40.8
	Trial plot 2	2006 winter	Watering can	Improved	42.9	1	18.5
N'Bat	Trial plot	2006 winter	Horse pipe	Improved	25.5	1	26.3
N'Titam	Trial plot	2006 winter	Watering can	Improved	26.3	Twice in a day	22.8

Eggplant

Oasis	Plot	Cropping season	Irrigation method	Farming method	Yeild kg/m ²	Irrigation interval (days)	Total amount of water supplied m ³ /10m ²
Tirabane	Trial plot	2006 winter	Basin	Improved	24.1	3~5	46.1
N'Bat	Trial plot	2006 winter	Horse pipe	Improved	73.2	1	26.3
N'Titam	Trial plot	2006 winter	Watering can	Improved	67.8	Twice in a day	28.3

Carrot

Oasis	Plot	Cropping season	Irrigation method	Farming method	Yeild kg/m ²	Irrigation interval (days)	Total amount of water supplied m ³ /10m ²
Tirabane	Before study	2005 winter	Basin	Traditional	8.6	3~5	47.7
	Trial plot	2006 winter	Basin	Improved	13.6	3~5	47.7
N'Bat	Trial plot	2006 winter	Horse pipe	Improved	8.6	1~3	16.1
N'Titam	Trial plot	2006 winter	Watering can	Improved	21.2	Twice in a day	18.9

Result through irrigation trial shown following matters.

Crop	Contentsts
Tomato	<p>Pilot field 2 in Tiraban with the highest yield is the trial plot where water was supplied at the rate of 10mm per a day (it was 20mm per a day for 20 days of latter period) by watering can. In the oasis, the yield of other trial plot where water was supplied every 3 days (it was 5 days for middle season) is provided at the same level, too. As for TRAM (Total Readily Available Moisture), 10mm to 35mm of TRAM is observed for 40mm of effective layer, 13mm to 100mm is obserbed for 100cm of effective layer according to the study result concerning TRAM of Phase 1. Therefore, it is estimated that yeild was secured even if irrigation interval are lengthend because the water folding capacity of the trial plot was good. In addition, the quantity of watering (10mm / a day) did not give the crops water stress.</p> <p>On the other hand, yeild is little in N'Titam where trial plot was irrigated twice (morning and evening) every day, and N'Batt where trial plot was irrigated every days. It is thought that the reduction in yield was caused by other factors since the amount of irrigation water was satisfactory.</p>
Egge plant	<p>The yield of N'Titam and N'Batt irrigated every day obtains twice or more yield for the eggplant compared with Tiraban irrigated 3 days intervals. This is because value of TRAM is dispersed even with the same field.</p>
Carrot	<p>The yield of Carrot in N'Titam where water is supplied two times in a day is the heighest. On the other hand,</p>

Crop	Content
	<p>Tirabane where irrigation intervals are three to five days had only 50 percent amount compared with N 'Titam. N'batt has about 60 percent compared with N'Titam. Amount of irrigation is the most in Tiraban, and there is no big difference between N'Batt and N' Titam.</p> <p>Size of carrot cultivated in the oasis is around 10cm. The root can absorb only water near the surface layer. Therefore, sprinkle water every day and, in the case of carrot, it is important to irrigate everyday for obtaining the yield and prevent drying near the surface layer and not to give the crops water stress.</p>

The trial result of the tomato showed that yield didn't increase even if more than 10mm/day in ordinary season and 20mm/day in hot season are irrigated. That is, enough yeild can be secured by being irrigated with 10mm a day in ordinary season and 20 mm a day in hot season. Farmers in the oasis usually supplies water much more than enough. However, by making watering quantity proper, the reduction of labor and effective use of water resources can be improved.

Yield of carrot were less in the field which set irrigation interval. To secure the yield for carrot, it is important to irrigated more than once every day and keep moisture contents of surface layer. The necessary amount of irrigation water is 6 to 7mm/day in case of computation based on weather data. Amount of irrigation water such as 10mm/day in ordinaly season and 20mm/day in hot season is bigger than the value calculated. However, trial result shows sufficient water conservation is possible comparing a set value (10mm or 20mm/day) to the traditional way.

Through the result of trial plot of eggplant and TRAM values of Phase 1 study, it is difficult to set the number of irrigation interval concretely. Therefore, it is recommends to be irrigated every day so as not to give a water stress to secure stable yield.

Also, in case of irrigation by the watering can in Tagant province, it is easy to set the amount of irrigation. However, in case of irrigation by the pump water which is implemented in the Adrar province, it is difficult to irrigate a certain amount of water on a daily basis.

Therefore, the amount of irrigation water (10mm/day in ordinary season and 20mm/day in hot season) obtained here is spread to the women's group through the agricultural extension officer in Tagant province. On the other hand, it is difficult to set the irrigation interval and set the amount of water supply in Adral province. It is realistic to construct the lining of the earth canal and reduce the transportation loss in the oasis in Adral province. It is difficult to set the amount of irrigation for the each vegetable and for the woman group to implement it. Therefore, the amount of irrigation to all crops is expects to be safe if 10 mm/day in ordinary season and twice (morning and evning) of the same amount during hot season are recommended.

vi) Efficient water use for vegetable cultivation

It is necessary to consider climatic condition, planting calendar, the change of ground water level, and the temperature for efficient water use for the vegetables cultivation.

a) Crop calendar

Table 6.2.3(1) 17 shows the crop calendar of winter crops vegetable. Nursery is provided from the end of September to December for tomato, eggplant, cabbage, and onion. Seed of carrot are sown from October to November. As a result, the harvest will lies from January through May.

b) Monthly mean temperature

As shown in figure 6.2.3(1)5, the monthly mean temperature becomes low gradually from October, January is the lowest and becomes high after that. As for the evaporation, January is the lowest and becomes high afterward with the temprature.

c) Ground water level

The flucturation of ground water level for one year in Tirabane and N'Batt have used for vegetable cultivation trial and is shown in figure 6.2.3(1)5 (February, 2006 - February, 2007). X axis is adjusted to the crop calendar.

The ground water level is the highest in the hot rainy season, and declines gradually and tends to become the lowest in the hot dry season.

In the result of N'Batt in 2006, the water level recovers with the influence of the rainfall in June which peaks in the hot rainy season. On the other hand, the ground water level showed a decreasing tendency without recovering in Tirabane. Through the investigation in Tirabane, in the rainy season in 2006, it was less rainfall in 2006 than the normal year. Therefore, there was not enough amount of rainfall for recovering ground water level.

However, in the normal year, it is supposed to show a tendency that the ground water level recovers in the hot rainy season and it declines through the dry season.

The period of the growing of the vegetables which exclude nursery period is from the end of October to May and watering is necessary in this period. Ground water level decline about 2.0 m in N'Batt and 0.7 m in Tirabane according to ground water observation in 2006.

d) Effective use for water resource

The rapid water level decline comparing to normal year is caused by surplus water use in the oasis area where the source of water is limited to the well in the dry season as a

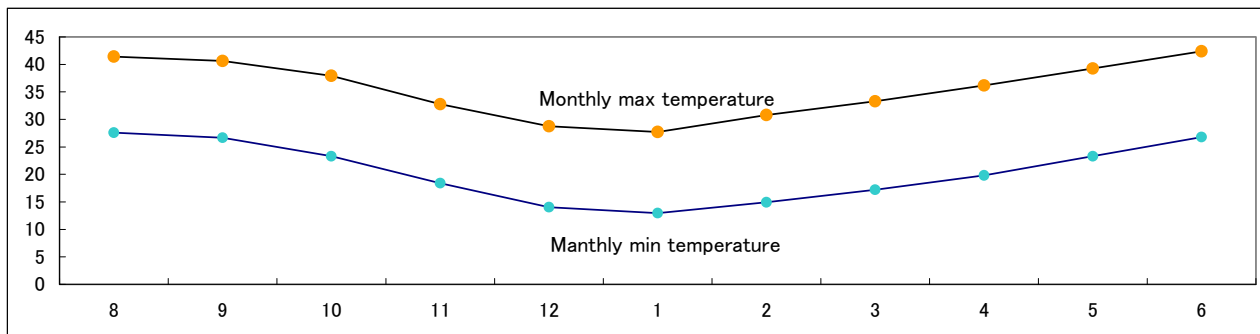
result the available quantity of water decreases.

Here, based on result of investigation, it is necessary to review the effective use of ground water for vegetable growing.

Table 6.2.3(1).20 Cropping Calender

Cropping calendar		August	September	October	November	December	January	February	March	April	May	June
Activities												
Tomato												
Nursery											
Field					-	-	-	-	-	-	-	-
Harvesting												
Eggplant												
Nursery											
Field					-	-	-	-	-	-	-	-
Harvesting												
Cabbage												
Nursery											
Field					-	-	-	-	-	-	-	-
Harvesting												
Onion												
Nursery											
Field						-	-	-	-	-	-	-
Harvesting												
Carrot												
Field					-	-	-	-	-	-	-	-
Harvesting												

Monthly max temp and min tem



Fluctuation of ground water level

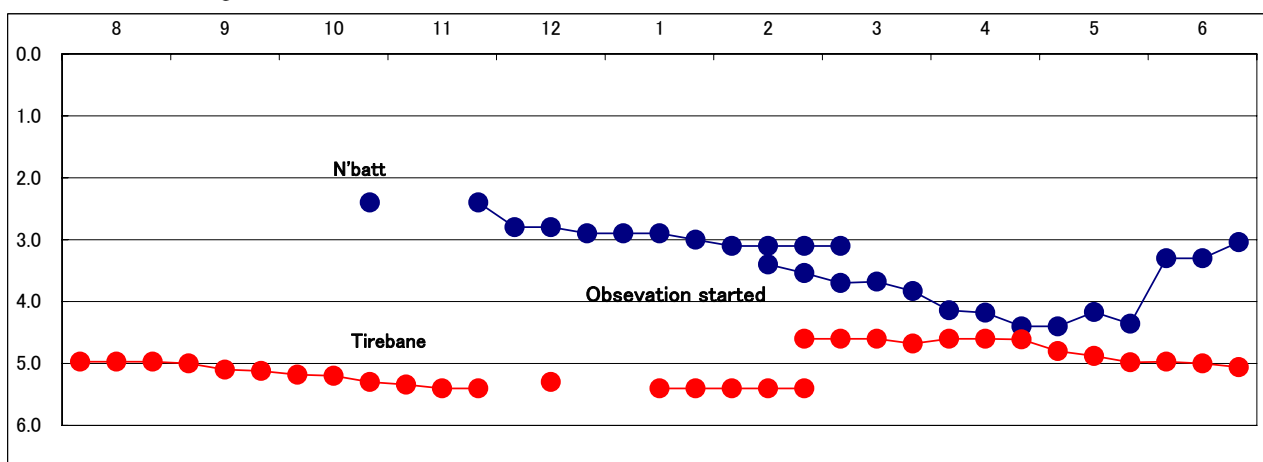


Figure 6.2.3(1).5 Changes of Max, Min and Average Monthly Temperature and Water Level

- Cropping calendar

The above-mentioned crop calendar is examined from the view point of ground water level. It is recommended that cultivation period are brought forward for one or two month from the point of effective water use. However, sowing period become hot season and it is necessary to prevent heigh temperature by shade and provide proper management of farming.

- Proper control of soil moisture

Water stress is one of the major reson for poor yield but amount of irrigation at one time is excessive for poor water holding capacity soil. As for the cause which the moisture stress are occured, is a low water holding capacity of the soil and unsuitable irrigation interval. There is much watering quantity in the Adrar province where engine pump is used and there are few in Tagant province where watering can by manpower is employed.

However, general way of watering in Tagant province is done through filling a basin with the water depth from 30 mm to about 50 mm (from 30 to 50 liters per 1m²).

On the other hand, water holding capacity is low because it is sandy soil. According to the phase 1 study, the TRAM value was in the range from 10 mm to 40 mm and the average on 5 oases was 19 mm. That is, about 20 mm of water is used by the crop in the validity. Supposing that the amount of irrigation is 40 mm per one time and the TRAM value is 19 mm, then 21mm(40—19mm) isn't used by the crop. Therefore, by setting amount of irrigation appropriately, the reduction of applied water is possible by about 50 percent. In this trial, 10mm a day for the amount of irrigation was set in Tirabane in consideration of the TRAM value and the consumptive use caliculated by the Pen man method (6mm to 7mm/day), and the possibility of the amount of irrigation water reduction was examined through carrot and tomato cultivation.

- Decrease of conveying loss in canal

The reduction of the conveying loss in the canal is possible through the provision of lining of canal. There are some materials for canal lining such as clay soil, concrete, and vinyl sheet, etc. Moreover, pipe lines including drip irrigation system are effective. In PP this time, a lining test by clay soil which is available in the oasis is implemented. The lining effect to have been confirmed (suppressing canal loss by about 30 %) but canal lining of vegetable field actually is hard for the women group alone and needs the cooperation of the male member.

Also, as for the drip irrigation, PDDO and FAO are implementing trial and the result can be shared. The agricultural extension officer resides in the site and a problem in case of farming and system operation are expected to clarify through the trial.

- Variety and cultivation area

The ground water level is high during sowing and nursery stage and becomes the

lowest in harvesting stage. Therefore, the available water in the sowing stage and harvesting stage are different. Where expanding cultivating area, it becomes difficult to get irrigation water in the harvesting stage. Therefore, it is necessary to use the short period variety and start preparation of nursery earlier, set cultivating area considering the availability of water during the harvesting stage

2) Improvement of poultry farming techniques

i) Background and Objectives

Based on the results of the previous study, the activities easy to be managed by the residents with the materials available in the oases are implemented with the training on cooking. The improvement of nutrition, increasing the opportunities of cash income, the diversification of life, the sensitization of poultry farming have been planned as impacts for residents lives.

ii) Status of the activities

a) Trained groups

The demonstration of poultry farming activities was conducted at 4 sites during the two years period of the study with women groups. At Tirabane, a management group was formed by bringing together representatives of several groups (2 women per group) and in the other oases women from the existing cooperatives have been selected. Table 6.2.3 (1).18 summarizes the poultry farming activities. The support consists of the construction of a demonstration cage, technical training and technical monitoring (2 times a year).

Tableau 6.2.3 (1).18 Trained Groups and Content of Assistance

Year	Oasis	Outline of the group	Content of support
2006	Adrar Tirabane	To train a new group (by representatives of several groups) 40 women participated.	Construction of a cage, technical training and monitoring.
	Tagant Lemquetah	An existing cooperative. 28 women participated.	Construction of a cage, technical training and monitoring.
2007	Adrar M'Haireth	An existing cooperative. 20 women participated.	Construction of a cage, technical training and monitoring.
	Tagant N'Drew	An existing cooperative. 37 women participated.	Construction of a cage, technical training and monitoring.

b) Summary of pilot projects

The poultry farming activities are summarized in Table 6.2.3 (1) .19 below.

Tableau 6.2.3 (1).19 Summary of Activities for the Improvement of the Poultry Farming Techniques

Method	In addition to the strengths and weaknesses of the technique introduced by the previous study by JICA, the points relative to the landlockness, the excessively high summer temperatures, the relatively low winter temperature, the extremely low humidity rate, the lack of food source, the primitive animal farming technique or the lack of organizational activity have been taken into consideration for determining the method of farming to be introduced.
Farming system	Proceed to an explanation to the group interested in poultry farming according to the scheme of the activities, the strengths and weaknesses or the effects it provides and train a group consisting of a chairperson, a vice - president, an accountant, and people in charge of animal farming.
Construction cage and introduction of the poultry	The cages were built by determining the conditions necessary for their construction and after checking the place with the necessary material (dormitory box and for egg laying box). The proximity poultry have been brought to prevent deaths caused by the change of environment (10 poultry at the beginning).

The Activities (the demonstration of improved farming techniques) were started in January 2006 in Tirabane in Adrar and Lemguetah which is a satellite oasis of N'Titam Tagant. Wishing to start these activities, the inhabitants of these two oasis spontaneously trained the groups. Both sites are landlocked and do not have significant industry.

The techniques introduced are, the construction of improved cage (with wire mesh), the construction of a cage for chicks, the feeding method and the construction of egg laying room made of stone. Table 6.2.3 (1) 20 at the end of the chapter shows each technique in detail.

In January 2007, the study team has helped for the construction of poultry barns and conducted a training of women's groups of M'Haireth in Adrar and N'Drew in Tagant following the request for technical assistance issued by these women groups who have heard about poultry farming activities in the two oases.

iii) Results of activities

It is the women who manage to making the barns for the poultry farming activities in the present pilot projects. So, eggs and meat are consumed or sold by these women. The other women who have seen them also begun to practice the farm. There are many women who conduct poultry farming in Tirabane. They have had the consensus of the family members as they looked for the sources of nutrition being aware of the problem of malnutrition.

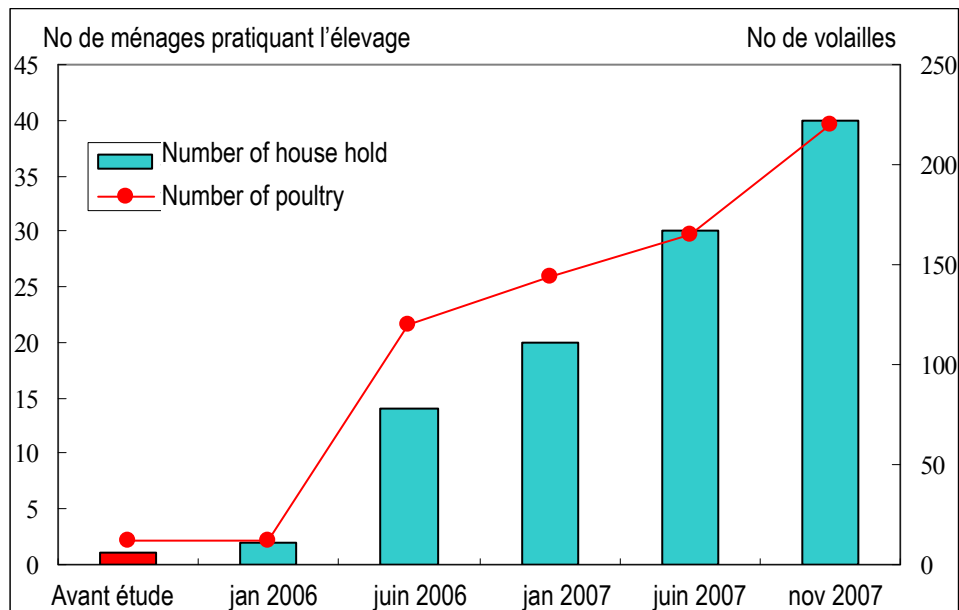


Figure 6.2.3 (1).6 Change in Number of Households Involved in Animal and Poultry Farming in Tirabane

The results of activities in each oasis are as follows

- Tirabane

In this oasis where poultry farming is expanding after the demonstration of January 2007, 40 households that represent 40% of total households (about 100) practise animal farming (November 2007). The number of poultry calculated from the average number of 11 households 5,6, is about 220 poultry (see Figure 6.2.3 (1) .5, it is not the cumulative number).

a. Commercialisation

Approximately half of the 18 households involved in the farming had traded poultry in January 2007. The buyers are the inhabitants of the oasis. The household who sold the most made approximately 25000UM with 15 poultry. Before, all poultry sold were hens but 5 farmers sold cocks in the period of June 2007.

Begining the January of 2007, the commercialisation of eggs has become a source of stable income for 8 households through selling several eggs per week. The number of residents selling eggs being increased in Tirabane (by starting poultry activity), the price of an egg which was about 50UM has dropped to 30-40UM (November 2007). One can cite the commercialisation of frozen poultry in Tirabane as an effect of the spread of this activity. These chickens are sold at the shop of the oasis for a price of

800 ouguiyas / kg, and the residents are buying them. It is the leader of the women's group that conducts the poultry farming activities who commercialises these frozen poultry. She started marketing as the inhabitants of the oasis began to eat white meat.

b. Domestic Consumption

According to the survey of January 2007, out of the 14 households 92% (13) and 78% (11) of households consumed eggs and meat, respectively. With the increase in the number of households engaged in poultry farming, some have seen declining revenues through the change in culture of food. Such an increase can help domestic consumption rather than commercialisation.

- M'Haireth

A demonstration of poultry farming was carried out in January 2007 for the 20 women. As of November 2007, 2 households have already started breeding on their own initiative. Residents have built additional 3 cages as the number of poultry has become too large in the demonstration. The women in the demonstration group manage the cage in turn. In November 2007, 6 adults are raised per cage.

a. Commercialisation

The group of women began the commercialisation of eggs. Even though the quantity varies depending on the season, they were able to sell 7 eggs during the 4th week of October 2007 and made 480 UM (60/egg). A practical training on cooking with meat and egg took place in the framework of the seminar for the improvement of the living conditions. The residents are more and more interested in this activity.

b. Domestic Consumption

The homes of 3 people surveyed in November of 2007 consumed the meat and the eggs in their homes. Women have learned recipes with meat or eggs at the seminar for the improvement of the living conditions on August 2007 organized by the MCPFEF. The eggs are eaten mainly by children on grounds of nutrition.

- Lemguetah

The inhabitants of this oasis move during harvest period (mid-June to August), the poultry raised in the cage were shared between 4 family members of the activity. Many cases of death and damage by wild animals were observed during the trip. Therefore, people put emphasis on increase of the number of poultry.

Each member keeps 4 adults poultry, and many chicks (November 2007). Women members of this activity, considering it as a means to earn cash income through the sale of poultry, are trying to increase the number of poultry and do commercialise. When they have a lot of eggs, they use them for self-consumption.

(2) Income-generating activities/improvement of livelihood, Support to women organization, and Awareness/IEC

1) Context and objective

The above-mentioned pilot project aimed at stimulating women's activities related to income-generation and technical improvement regarding living condition. The targeted beneficiaries are women individual/organizations of oases who have not sufficiently profited from participating in the development process.

The following three (3) activities were undertaken with the aim to validate the contribution of women's activities to the improvement of living condition as well as reduction of poverty in the oases areas.

i) Training and support on Income-generating activities/improvement of living condition

It aimed at activating the income-generating activities and reinforcing the capacity of the oases women on everyday life through carrying out a balanced support of both improvement of production and living condition.

ii) Support to women organization

It aimed at promoting voluntary (spontaneous) activities of female cooperatives and capacity development of these organizations through training and formation.

iii) Awareness and IEC

Awareness programs were carried out through IEC sessions related to gender and women's empowerment. It aimed at promoting female activities related to improvement of the living conditions and their participation in the community development process.

2) Contents of activities

i) Training and support: Income-generating activities and Improvement of living condition

- Contents and execution methods

Table 6.2.3 (2) .1 below summarizes the contents of training and support related to Income-generating activities and Improvement of living condition. The training/support was carried out with the following topics: i) support with income-generating activities (production skills), ii) seminar on improvement of living condition, and iii) training/formation on improvement of living condition.

Table 6.2.3 (2).1 Summary of Training and Support on Income-Generating Activities and Improvement of Living Condition

	i) Support with income-generating activities (production skills)	ii) Seminar on improvement of living condition		iii) Training / formation on improvement of living condition
		Central level	Regional level	
Responsible	MCPFEF, facilitator of CFPF, and AVB	MCPFEF, and Mission member	MCPFEF, facilitator of CFPF, and AVB	MCPFEF, facilitator of CFPF, and AVB
Beneficiaries	Female cooperatives in target oases	MCPFEF, MAE, MS, PDDO, and PDRC	Representatives of women (AA/ASC, leaders of female cooperatives) and volunteers of MCPFEF	Female cooperatives in target oases
Period	July 2006 ~ October 2007	June 2007(5 days)	June ~ July 2007 (2-3 days per seminar)	July ~ October 2007 (once per oasis)

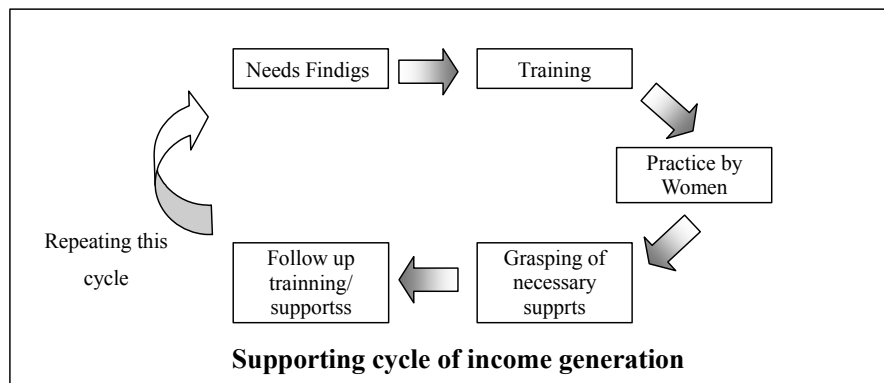
ii) Support with income-generating activities (production skills)

Regarding the support to income-generating activities, various trainings and supports were organized in order to improve their skills of production so that women are smoothly able to carry out income-generating activities. The summary of technical training carried out within this topic is shown in Table 6.2.3(2).2 below.

Table 6.2.3(2).2 Summary of Technical Training Carried Out within the Income-Generating Activities

Training	Content
Sewing I	Basic of sewing and dressmaking, blouse making manually
Sewing II and III	Explanation and practice of intermediate sewing, Usage of sewing machine
Dyeing I	Basic of dyeing, usage of dyeing powder, practice of dyeing
Dyeing II and III	Explanation and practice of intermediate dyeing (mixture of different colors, tie dyed items)
Compost	Compost demonstration
Cultivation of pasture	Demonstration of pasture cultivation

The activity was carried out according to the support cycle such as: training; follow-up mission; and follow-up support based on



the necessity observed in the field. For example, the project organized the first training on dyeing according to the needs required by women. After the training, women voluntarily tried to practice it with the materials left from the training. Then, during the follow-up mission, the project verified the technical level used by women to carry out these activities, as well as their organizational capacities. At that moment, women received necessary advice from the mission as well. Then, after the follow-up mission, women practiced dyeing activity again and receive additional training if required. This cycle was thus repeated.

For organizing these trainings, the project paid particular attention to a maximum participation of women. However, sometimes the project could only manage to invite two or three representatives of each cooperative in the training depending on topics..

iii) Seminar on improvement of living condition

Seminar in Nouakchott: In the past, the support was mostly focused on improvement of production skills rather than living condition. In other words, there were limited occasions for the populations to think about improving their daily life and living condition. In this context, a seminar about improvement of living condition was organized at the central level so that the personnel of MCPFEF, MAE and MS can carry out development programs by making full use of the concept/approach of improvement of living condition.

Seminar in regional capitals: After the seminar in Nouakchott, the seminars of improvement of living condition at regional levels were organized in both Adrar and Tagant regions. The purpose of these seminars was to provide the personnel at regional level with knowledge and skills required to carry out the development program related to improvement of living condition. Moreover, the seminars served both the regional administration staff, and “the local female leaders” such as AA/ASC and representatives of female cooperatives (see table 6.2.3 (2).3.)

Table 6.2.3 (2).3 Summary of Seminars on Improvement of Living Conditions

	Seminar on improvement of living condition (Nouakchott)	Seminar on improvement of living condition (regional capital)
Responsible	MCPFEF, Mission member	MCPFEF, AVB, and C/P of MS
Participants	MCPFEF, MAE, MS, PDDO, and PDRC	Volunteers of MCPFEF, local female leaders (AA/ASC et representatives of female cooperatives)
Period	June 2007 (5 days)	June-July 2007 (2-3 days per region)
Lieu	MCPFEF training center	MCPFEF regional office(Adrar et Tagant)
Contents	<ol style="list-style-type: none"> 1. Definition/method, approach, system of extension/expansion on improvement of living condition 2. Role of facilitator, form of extension/expansion, ways of guidance 3. Improvement of living condition in Japan after the II World War 4. Administrative structure for support to facilitators 	<ol style="list-style-type: none"> 1. Improvement of living condition in the oases 2. Film presentation on improvement of living condition in Japan 3. Theory and practice related to nutrition and food 4. Necessity of improved cooking stove and its practice 5. Theory and practice on vegetable farming 6. Management of cooperative, keeping an account book, and making activity plan 7. IEC and awareness session (women's rights etc) and discussion

iv) Training/formation about improvement of living condition

The training/formation about improvement of living condition was carried out for the purpose of enhancing women's capacities towards skills/knowledge and conscience regarding improvement of living condition. This program was organized in addition to support to income-generating activities as mentioned above. Method of training/formation was almost same as that of income-generating training (see the table 6.2.3 (2) .4).

Table 6.2.3(2).4 Summary of Training on Improvement of Living Condition

Name of training	Content
Improvement of living condition	Theories related to improvement of living condition and discussion
Nutrition and cooking	<ul style="list-style-type: none"> • Nutrition of vegetables/meats/eggs and cooking • Fish dish (proteins and cookery) ,and bakery and pastry (using eggs)
Method of vegetable conservation	<ul style="list-style-type: none"> • Preparation of dried vegetables and its conservation • Preparation of bottled vegetables and its conservation
Improved cooking stove	Necessity of improved cooking stove and practice (improvement domestic energy consumption)

v) Support to female organizations

- Contents and execution methods

It is important for women to let them find their solutions by themselves and develop their spontaneous activities. These capacities might be the basic of women's empowerment towards improvement of living condition and diversification of products, and finally reduction of poverty. In this context, the project offered three (3) combined activities, such as i) support to female organizations, ii) support to auto-resolution capacity, and iii) income-generating activities. The following table shows the summary of support to female organizations.

Table 6.2.3(2).5 Summary of Support to Female Organizations

	1. Training/formation on organizational management	2. Support to female organization through income-generating activities
Responsible	MCPFEF, AVB, PDDO, consultant	MCPFEF and AVB
Participant	Female cooperatives and AA/ASC	Female cooperatives and AA/ASC
Period	<ul style="list-style-type: none"> ■ Oasis in Adrar : June 2006 to October 2007 ■ Oasis in Tagant : June to October 2007 	<ul style="list-style-type: none"> ■ Oasis in Adrar : June 2006 to October 2007 ■ Oasis in Tagant : June to October 2007

- Training/formation on organizational management

The training was carried out for the purpose of reinforcing the organizational capacities of female co-operatives. The training/support on planning/management of the organizational activities was carried out by aiming at the substitutability of various community activities and income-generating activities. It can be emphasized that this program was organized step by step according to the stages that the female cooperatives had reached (see following figure).

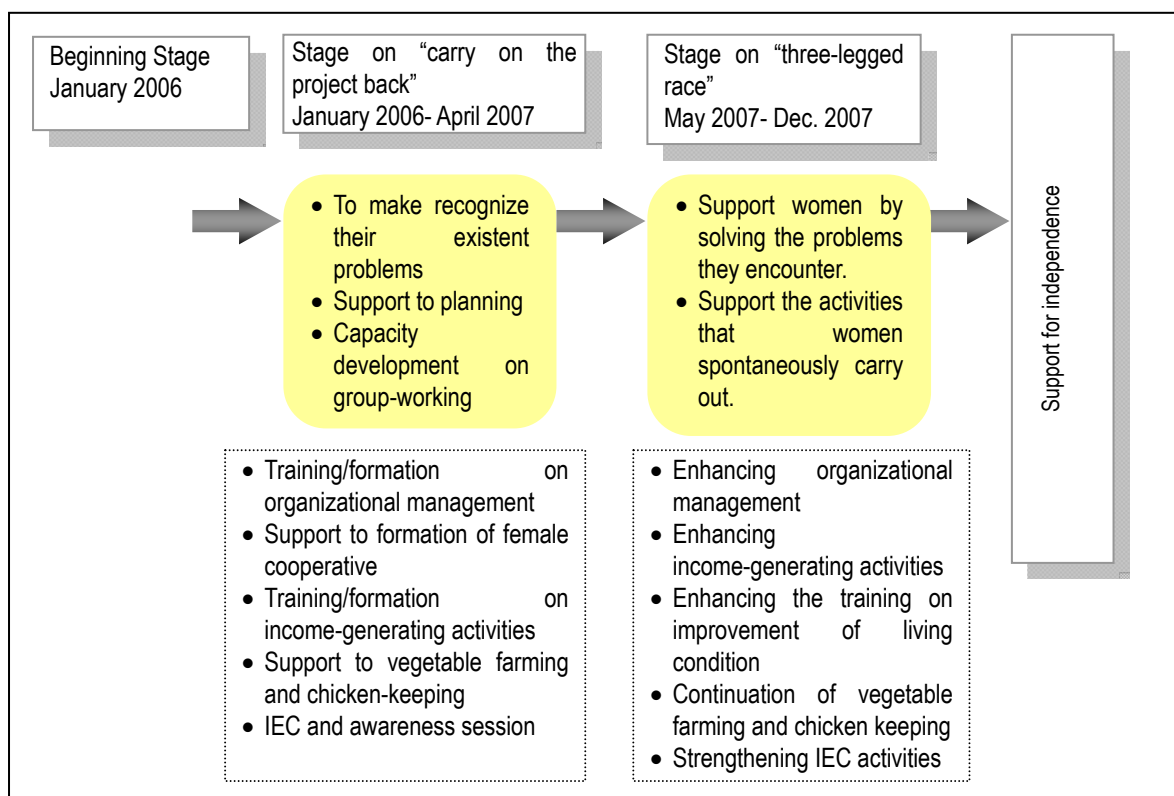


Figure 6.5.3(2).1 Flow chart of different support stages

Fig. 6.2.3.(2) .1 Debut of by-step measures to support women's organizations

The characteristic of the support to female organizations lies on different approaches according to capacity level of female cooperative.

In the first stage (“*carry on the project back*”³: January 2006-April 2007), the project helped women with finding and tackling problems by themselves through various occasions of formation/support. The training/formation consists as follows: management of organization, reinforcement of the group activities, technical support of income-generating activities and vegetable farming, and finally IEC.

Then, in the second stage (“*stage on three-legged race*”: May -December 2007), the project supported women in their initiatives developed at the previous stage. In other words, in this stage women started to recognize various problems and try to tackle and develop their spontaneous activities, then the project brought some advices in order to accompany them.

However, the project could not reach the final stage due to limited project duration. Thus, it is necessary to have a long-terms support so that women and female cooperative are able to achieve autonomy, and to be socially/economically independent.

- Support to female cooperative through income-generating activities

The reinforcement of female cooperative was carried out through the support of activities on income-generation, vegetables farming, and chicken-keeping.

At the beginning, the activities of female cooperatives were very limited to seasonal practices of vegetable farming, small trade for tourists or *Guetna* period. Their activities remained rudimentary, and there was practically no collaboration among female cooperatives.

Later, when women started to receive the support on vegetable farming, chicken-keeping, dyeing, and sewing from the project, their choices towards activities became more widened and diversified. By consequence, female group activities become more dynamic and well-organized. The project activities were focused on carrying out training/formation and providing necessary advices so as to promote the spontaneous activities of women.

The dyeing, for example, is one of the activities which were actively widened by

³ The categorization of these stages such as “carried on the project back” or “three legged race” was made on the basis of “*The way of facilitator learned by agent of improvement of living condition - lessons drawn by the Japanese experience -*” (Miho Ota, International Training Center of the JICA, August 2004)

women of the targeted oases. The additional (repeated) technical training/formation was carried out after the evaluation of their dyeing activities.

iii) Awareness and IEC

- Contents and execution methods

The awareness and the empowerment of women are essential for promoting women’s spontaneous activities. In this context, the project organized some IEC activities to support women in raising their awareness and consciousness.

In the oasis level, the following activities were carried out: i) awareness session aiming at raising women’s consciousness through women’s rights and that of family⁴, ii) awareness and discussion session aiming to learn problem-solving capacity.

Those activities were covered by three (3) topics such as i) IEC carried out by personnel of MCPFEF during the training and follow-up mission in the oases, ii) IEC session organized by AA/ASC in the oases, and iii) IEC training for AA/ASC who would be facilitator in the oases (see the table 6.5.3 (2) .6 following).

Table 6.2.3(2).6 Summary of Awareness and IEC Activities

	1. Awareness and IEC session aiming to raise women’s consciousness	2. IEC session organized by AA/ASC in the oases	3. IEC training for AA/ASC carried out by MCPFEF
Responsible	MCPFEF	AA/ASC	MCPFEF (ICE staff)
Participant	Female cooperatives, AA/ASC	Female cooperatives	AA/ASC
Period	June 2006 to October 2007 (during the training and support in the oases)	January to October 2007 (once per week)	June 2006

- Awareness and IEC activities related to female promotion and gender

The following table shows the contents of IEC activities related to female promotion and gender. In general, the personnel of MCPFEF carried out these activities during the training/support and the follow-up mission. In addition, a guide of IEC was elaborated in the “Handbook for the improvement of living condition and the development of oases through female promotion”. The provisional version was distributed to the AA/ASC and used as an experimental.

Table 6.2.3(2).7 IEC Topics on Female Promotion and Gender Activities

⁴ The Personal Code based on *Sharia* (Islamic law) has been just introduced in Mauritania; women have to understand their rights and duties for the activities on improvement of the living conditions or the Community development. The IEC on the Rights related to women, children and family is an important mission of the MCPFEF.

IEC topics on female promotion and gender	
1	Personal Code (personal statute and family Code)
2	Convention on the Elimination of All Forms of Discrimination Against Women
3	Harmful practice (divorce, FGM, cramming, early marriage)
4	Reproductive health (family planning etc)
5	Importance of education for women
6	Participation of women in the development
7	Obligation and rights as citizen
8	Environment and hygiene (securing domestic energy and safe water)
9	Role of facilitator and facilitation skill

- IEC activities organized by AA/ASC (except health issue)

AA/ASC had received the 3-days preliminary IEC training by MCPFEF's staff. The training consisted of: i) the essential topics of IEC related to gender factor, and ii) IEC methods and skills.

The main topics treated by AA/ASC in the oases were health and hygiene issue. Besides health issue, Personal Code, importance of girl's education, improvement of living condition were more discussed among women in the oases.

3) Result

The following figure recapitulates the contents of pilot projects and results.

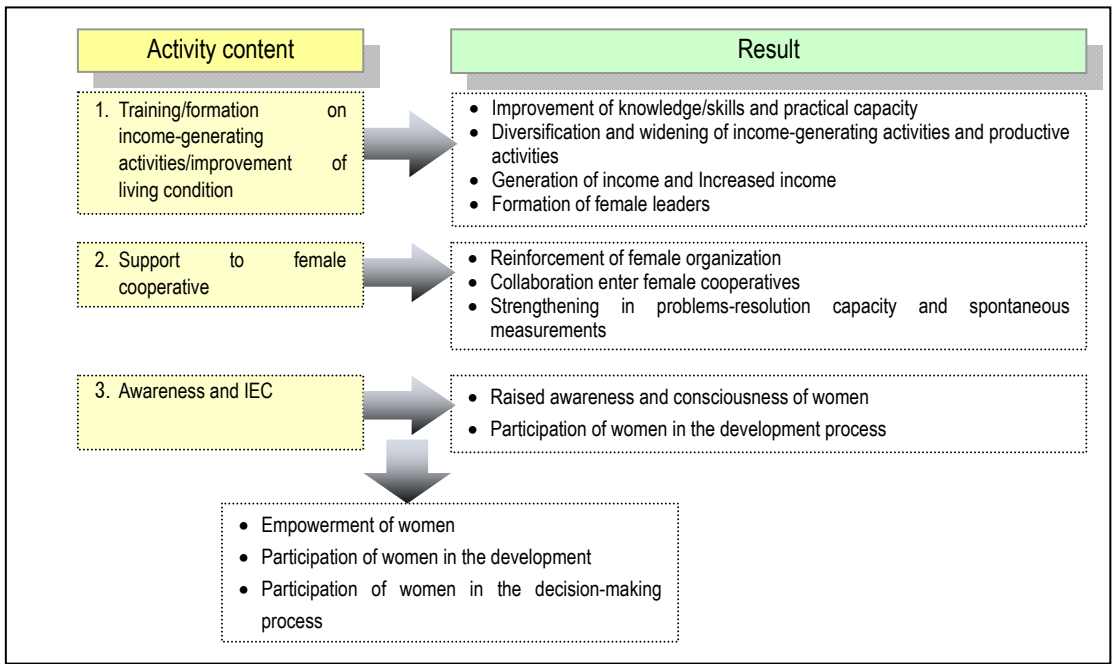


Figure 6.2.3(2).2 Summary of Contents and Results of Pilot Projects

i) Training/formation on income-generating activities and improvement of living condition

As above-mentioned figure, the results obtained from the activities on income-generation and improvement of living condition are as follows: i) improvement of knowledge/skills and practical capacity of women, ii) diversification and widening of income-generating activities and productive activities, iii) generation and increased in income. The following table recapitulates these results.

Table 6.2.3(2).8 Results from the Training related with Income-Generating Activities and Improvement of Living Condition

Results	Level of achievement	Example
1. Reinforcement of knowledge /skills and practical capacity	<ul style="list-style-type: none"> • Had learned and practiced the knowledge and skills about sewing, dyeing, cooking, vegetable conservation, and improved stove preparation. • By obtaining knowledge and new activities for spontaneous improvement of living condition, the motivation was raised. 	<ul style="list-style-type: none"> • Activities on sewing, dyeing, and cooking are continuously practiced after the training. • Before women were passive due to lack of opportunity to learn new skills and knowledge. Now they can take more initiatives than before.
2. Diversification and expansion of activities on income-generation and products	<ul style="list-style-type: none"> • They can produce and sell the dyed <i>Boubous</i>, fabrics and children's dress (diversification) • The size of activities was widened while producing and selling the products. And the groups are more organized than before. • The activities were widened by marketing the products to other oases. 	<ul style="list-style-type: none"> • The dyeing becomes very active in Tirabane. The women market their products in the neighboring large-size oases such as Aoujeft. • Female cooperatives work in collaboration with other cooperatives during dyeing and sewing activities (Tirabane, M'hairath, and N'Titam). • Collaboration between cooperatives has been reinforced; the Union of female-cooperatives was founded in Tirabane.
3. Generation and increased income	<ul style="list-style-type: none"> • Income was generated and increased through the diversification and widening their activities. 	<ul style="list-style-type: none"> • Before income was limited as vegetable farming and small trade. Nowadays women can gain income from sewing, dyeing, and chicken-keeping activities as well.
4. Formation of female leaders	<ul style="list-style-type: none"> • Practical capacities of female leaders and AA/ASC were improved by receiving the training related to improvement of living condition, as well as the support in the field. 	<ul style="list-style-type: none"> • AA/ASC carried out the activities of improvement of living condition and income-generating activities in the oases, while collaboration with the representatives of female cooperatives.

ii) Support to female organizations

The following results were obtained through the support to female cooperatives: i) reinforcement of female cooperatives, ii) reinforcement of collaboration among female

cooperatives, iii) strengthening in problems-resolving capacity and spontaneous measurements.

- Increased numbers of registered female cooperatives

The following figure shows the evolution of the number of cooperatives officially registered in the 4 targeted oases⁵. It is seen that all the cooperatives of Tirabane are now registered and the number of registered cooperatives in N'Titam; M'haireth and Fares are still in progress as well. We can thus say that 90% of the co-operatives are already registered or in process.

Thus, the female cooperatives try to widen the organizational activities by arranging internal rule and promoting registration.

- Reinforcement of capacities of female organization and collaboration

Before, female cooperatives gathering friends and family used to carry out their activities without knowing the role of cooperative, organizational operation, and neither method of activities. There were few co-operatives equipped with accounting books, and they shared their benefits between the members by calculating unsystematically.

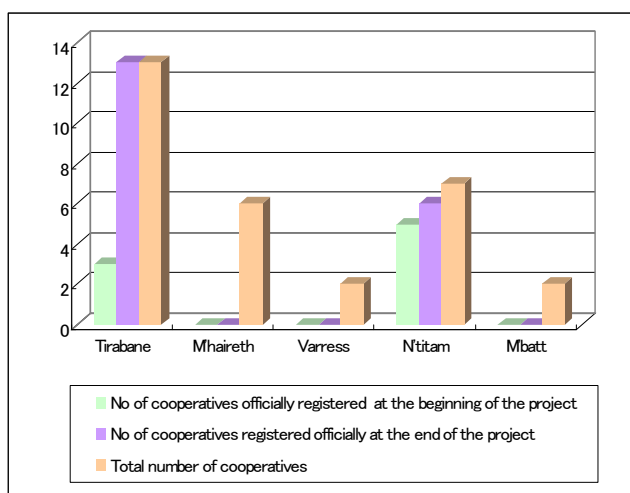


Figure 6.2.3(2).3 Increased Numbers of Registered Female Cooperatives

As mentioned previously, the number of registered cooperatives increased after the various training/formation and support. They have widened their activities and realized the importance of organization. Women started to make action plan through the activities on vegetable farming, chicken-keeping, dyeing and sewing.

The following table shows how women have started to work in collaboration with other cooperatives, as well as creation process of Union.

Table 6.2.3(2).9 Movement of Unification of Female Cooperatives

Oasis	Union	Creation of Union
Tirabane	o	• Joint work among cooperatives and creation of union was carried out.
M'haireth	x	• Cooperative has a tendency to work together during production and marketing

⁵ Usually, the oasis of Fares is considered a part of M'haireth and the number of targeted oases is considered in total four (4). However here, we count five oases by taking account with the Farres as 1 oasis.

Oasis	Union	Creation of Union
		(sewing and dyeing). <ul style="list-style-type: none"> • Several cooperatives work in collaboration with the installation of community shop.
N'Titam	x	<ul style="list-style-type: none"> • 7 cooperatives had carried out their activities separately before. • Nowadays, they work together during dyeing activities. • Creation of Union must be considered in the long run.
N'batt	x	<ul style="list-style-type: none"> • There are only two cooperatives, since oasis is small.

- Reinforcement of autonomy

As mentioned previously, cooperatives become more organized and active, and one can observe more spontaneous activities. Previously, women who had not profited from training/formation and support had very limited capacities on problem-solving. They felt always themselves that they were not concerned with the development process.

Nowadays, they express that they can improve their living condition by themselves. They also emphasize that they can carry out more effective activities while working together instead of working separately. As their expression showed, they seemed to start taking more initiative of their actions. It can be said that it is effective for women to provide the repeated cycle such as an initial training corresponding to their needs, then a support in the field, and finally another support based on their insufficiency. This cycle can help women with raising their autonomy and empowerment.

iii) Awareness and IEC

It is important that women are aware of their rights and of importance of participation in the development process. Raising awareness and consciousness of women might be the basis of improvement of production skills and living condition, as well as the dynamism of their cooperatives. In this context where the conscience of women's rights is not widespread in Mauritania, it is important that the women are aware of their rights and participate in the processes of development.

Thus, the topics of Personal Code (personal and family code, personal statute and women's rights), girl's education, reproductive health, and participation of women in the socio-economic activities, were treated in the IEC sessions. At the end of the project, we observed a change in awareness and consciousness of women in the oases.

iv) Establishment of local sales network

Tirebane where dyeing activity is making progress, female cooperatives actively sell their products such as dyed secondhand clothes and new veil.

Figure 6.2.3.(2).4 below shows the route of purchase of dyeing material as well as the market route of dyed products of Tirabane. Establishment of local sales network of peripheral oases of Tirebane is making progress: sales in Aoujeft (large-scale oasis with 3,000 population), in Maaden (medium scale oasis), in Loudey (small-scale oasis) and in Aghad (small-scale oasis).

Especially the network between Tirebane and Aoujeft is important. At the beginning of dyeing activity, cooperatives went to Aoujeft to sell their products. However nowadays, the populations of Aoujeft come to Tirebane for asking their dyed products or bring their old clothes for re-dyeing.

The improvement of quality is indispensable to strengthen the future sales network. For example, to sell their dyed products in Atar (regional capital of Adrar), the quality should be improved as much as possible. It is necessary to establish their local sales network as well as improve their quality simultaneously.

As for the purchase of dyeing material, woman cooperatives continue to purchase their material by going through the following three steps during pilot projects.

- First step: female cooperative -> the project driver -> coordinator at central level -> dyeing instructor of MCPFEF -> female cooperative
- Second step: female cooperative-> the project driver -> dyeing instructor of MCPFEF-> female cooperative
- Third step: female cooperative -> using local transportation -> purchasing at central market -> female cooperative

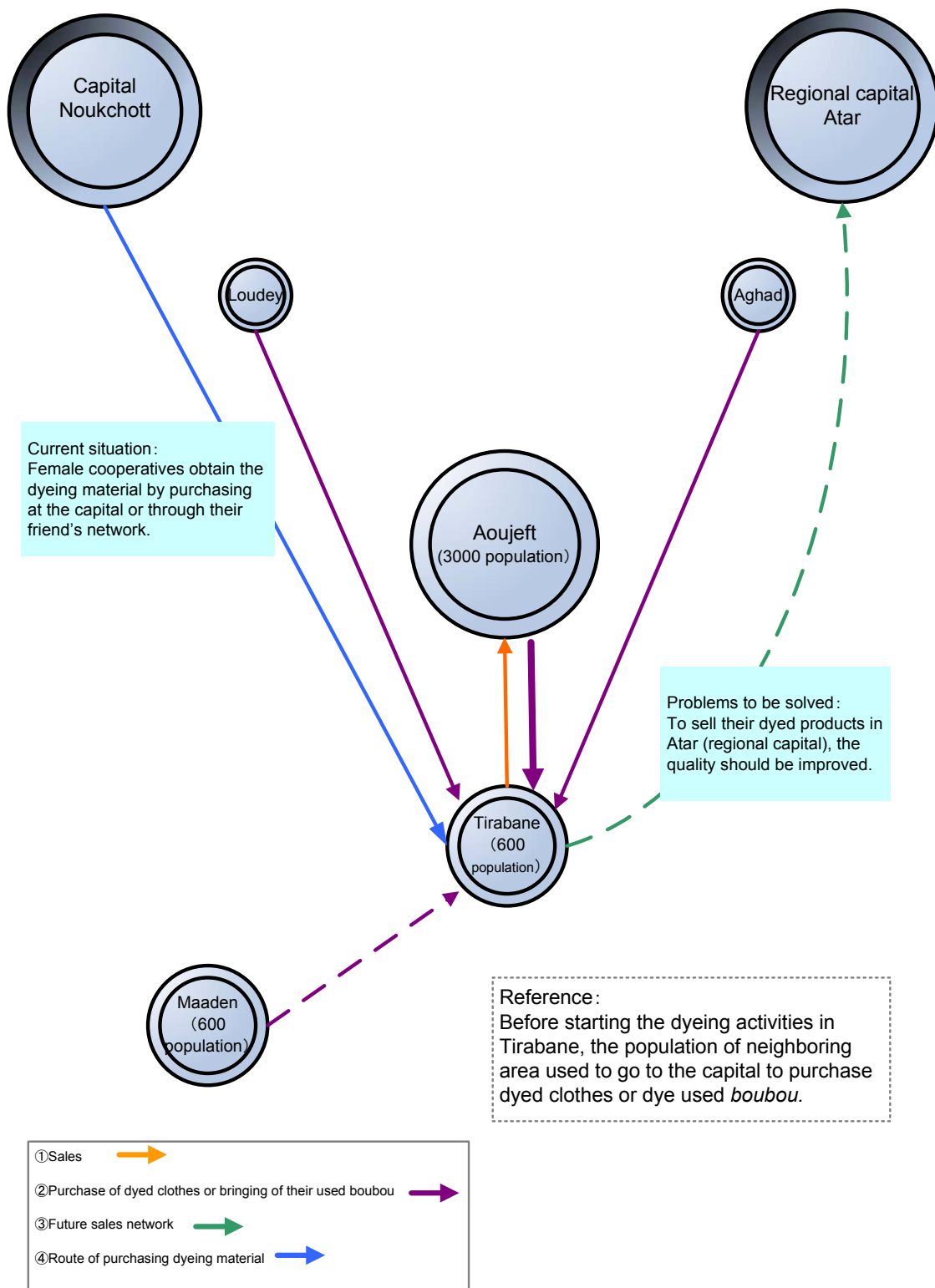


Figure 6.2.3(2).4 Establishment of Local Sales Network (Dyeing Activities)

(3) Hygiene and health improvement

1) Outline and objective

The previous JICA study has confirmed the necessity to improve health and hygiene conditions in the oasis area and mainly concerned are those that way of living is closely related to the oasis people.

It so important to guide the people in order to make some change in the way they behave to solve those problems. It is not easy for them to identify hygiene and health problems. They can perhaps identify agriculture and GRA problems. So it's important to be patient until they can themselves see the efficiency of the health and hygiene procedures.

2) Contents of activities

Two pilots activities were conducted in the field of health and hygiene in order to ensure the minimum of service to improve the living conditions of the oasis and the participation of residents in these actions. In addition, they aim to establish a structure for cooperation with the administration.

The activities were undertaken to insure basic health care and the people collabotion.

Table 6.2.3.(3).1 Content of Activities 1 : Health Care

Training of midwives auxiliary and communitary activities for headline improvement and maternity health.
<ul style="list-style-type: none">- Various trainings for the candidates selected among the oasis people on IEC, Gender, midwife auxiliary (National Health School), Basic health care. Fulfillment of health care and consciousness raising on deliveries assistance by AA/ASC at the oasis level.- Help and supervision of AA/ASC activities by the DRPSS health centers.- Improve heath centers equipment (By JICA Senegal, and the project of non refundable loans at the Japanese embassy in Senegal).- Elaboration of a manual for the midwife with the collaboration of the regional homologous

Table 6.2.3.(3).2 Context of Activities 2 : Health Care

Children's growth from 0 to 5years and collaboration with nutritional programs
<ul style="list-style-type: none">- Training on children's growth for AA/ASC.- Training for regional homologous on data processing.- Activities to improve nutrition trough collaboration with the nutrition improvement program of the CPSSA (during activities of the pilot projects).- Training on the monitoring of children's growth for the AA / ASC.- Formation of regional counterparts on data processing of nutrition.- Monitoring of child growth and nutrition education by the AA / ASC.- Activities nutrition improvement through cooperation with the programme to improve the nutrition of CPSSA (if implementation of the programme during the pilot projects).

It is hard for the appointed nurses to work in the existing difficult conditions around the oasis area. In such situation, one possible solution is to use the available human resources in the locality to insure medical health care. In accordance with that the AA/ASC selected among the residents were trained and have proven their potential to undertake sustainable and regular activities.

However, the AA or ASC trained before this study have not participate in any awareness campaign, which is important to prevent diseases; that is why the present study introduced IEC activities in the training program of AA/ASC.

Special feature 2: Midwife auxiliary (AA) and working simultaneously as communal health agent (ASC)

In Mauritania there are trained AA in the framework of the national program (in accordance with the ministry of health) after 6 month training at the national health school. In addition ASC were trained by a UNICEF program carried out in the willayas south of the country. Maternal health and basic treatment are important in some regions where lack of medical care is present. The AA and ASC can only do delivery assistance and basic health care separately.

In the case of the trained AA/ASC of this program it is now possible that one single person which is the AA/ASC can do both delivery and basic health care at the same time because they received additional training. Each one of them received a doctor's bag including first aid kit and the necessary equipment called USB to perform their activities in the oasis area.

Special feature 3: health improvement and AA/ASC assistance activities through health centers.

The health centers available in the areas of intervention are put into consideration in terms of equipment supply in order to prepare better work conditions for AA/ASC.

The oasis with health post are framed in the context of the present study with a view to streamlining activities in support of AA / ASC, monitoring and supply of drugs and validate the durability and performance of AA / ASC. It was also validated the existence of health post as a basic medical service through the strengthening of its role.

3) Results

i) Training of AA and ASC

Nine candidates among 11 were gradated from the National school of health, the 3 candidates failed because of the very low level of alphabetization despite the good notes in the practical exam. The AA/ASC is affiliated to the ministry of health and earn a salary of 70000 UM for 3-month period. After The training of the AA/ASC in the

National HEALTH School, they received additional training to be communal health agent and IEC agent. The IEC training is to put in practice the theory about the use of flipcharts and techniques to discuss with groups. The additional training of health communal agent, which last 3 weeks, is performed by a team from the DRPSS, and was about basic health care, USB management, water treatment and children's growth.



Bacteriological test method exercise



IEC Training



Child growth method exercise



Nutritional evaluation by the diagram

ii) Basic health care and maternal activities by AA/ASC

From the beginning of the activities of AA/ASC in the oasis 499 cases have been treated by (3 AA/ASC) in ADRAR and 1713 by (8 AA/ASC) in TAGANT. The cost of treatment (drugs) is around 96.103 um in Adrar and 60.193 in Tagant region. The most common diseases are eyes infections, headaches, wounds, mostly fever and anemia in Adrar region whereas, in Tagant region headache, fever, bronchitis, malaria ,eyes infections and parasitic are common.. In both region there are more women patients followed by men, and 0 to 5 years aged children, respectively. In addition, the frequency is higher during winter and summer from January to February and lower to 1/3 of the patient's number after April.

Table 6.5.3(3).1 shows the content of the intervention about delivery's accident caused by lack of prenatal consultations. As shown in the table 18 women of four oases have been transferred to medical centers for possible risk during delivery etc. and 40 others gave birth under assistance of the AA/ASC in good conditions. On the other hand 18 women miscarriage during the pregnancy because of hard living conditions and family consciousness

Table 6.2.3.(3).3 Assistance from AA/ASC

Information on delivery	Adrar	Tagant	Total
Number of pregnant women visiting the AA/ASC	29	25	54
Number of pregnant women with anemia	13	8	21
Number of pregnant women that received prophylaxis for anemia	12	10	22
Number of pregnant women with dermatological disease	4	16	20
Number of pregnant women transferred to medical centers	2	16	18
Number of deliveries carried out by the AA/ASC	19	21	40
Number of women having a miscarriage	6	12	18
Number of performed umbilical dressing	19	21	40
Number of women receiving after delivery Vitamin A 200 000 UI	17	19	36
Number of new born receiving tetracycline 1% in eyes	18	17	35

iii) IEC activities and children's growth follow-up

In the framework of the maternal activities, the AA/ASC has practiced IEC activities on a regular basis. These activities during the last 9 month from January 2007 include 70 sessions in Adrar and 115 sessions in Tagant with an average 10 to 17 participants even if that number varies according to each oasis, (See report 3). The total number of the participants has reached already 1675 person (626 in Adrar and 1049 in Tagant).

The 8 flipcharts topics (hygiene, dehydration prevention, maternity with no risk, the immunization, breast feeding, child growth follow up, heart diseases caused by obesity prevention , family planning and malaria (only in Tagant)) have been introduced during the implementation of the AA/ASC. The flipcharts were selected among those elaborated by the diseases prevention direction of the Ministry of health in accordance with the main problems in the oasis area as well as the topics of the IEC activities. The themes on hygiene are the most developed ones, the population seem to be very interested by the prevention of diseases and thanks to the HIV awareness campaign held by MCPFEF, on children health, prenatal consultation, gender and immunization.

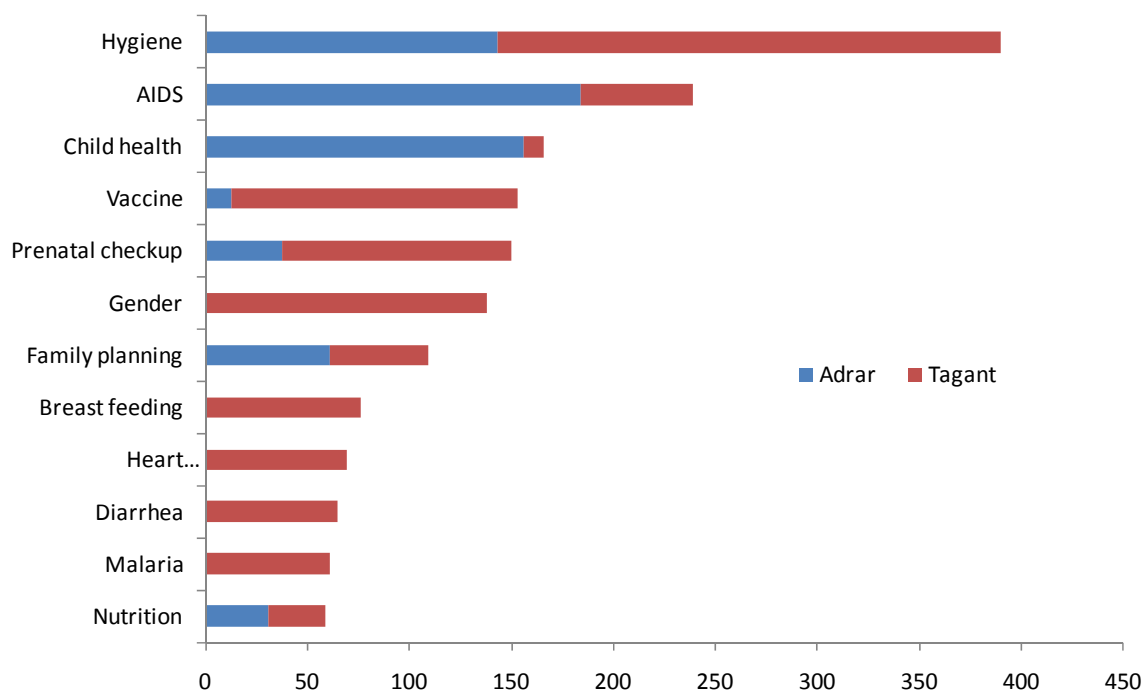


Figure 6.2.3(3).1 IEC Themes of Activities and Participants Numbers

The themes in the two regions are different. The common diseases are naturally treated. There is practically no case of malaria in ADRAR. The themes in Tagant are more various than Adrar.

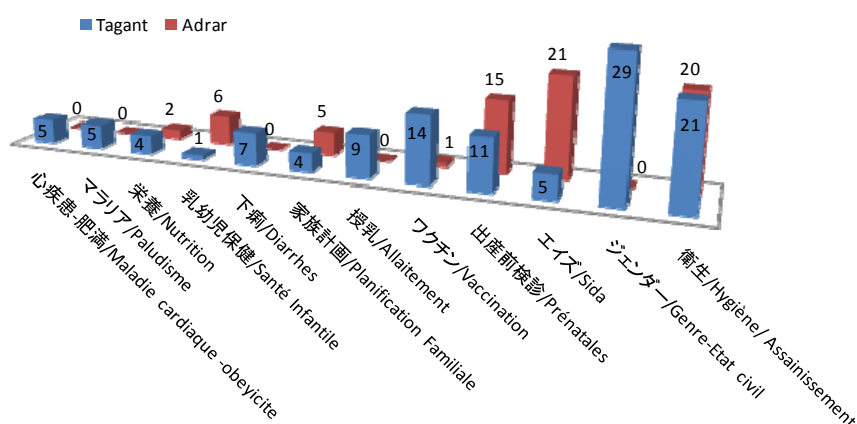


Figure 6.2.3.(3).2 Various IEC Themes developed in the regions

Two IEC methods were introduced during the implementation of AA/ASC. The first one is about discussion with groups and the second is the use of flipchart. It is not easy for someone that is not used to speak in public to undertake IEC activities. The

flipchart was introduced to ease this task. But since the themes of the flipchart are limited they create a discussion every time about the topic after the session and try to understand more, which made one creates an easy way to answer questions of the population through a manual showing the question and the answer at the same time and it is to be used by the AA/ASC in the framework of the present study.

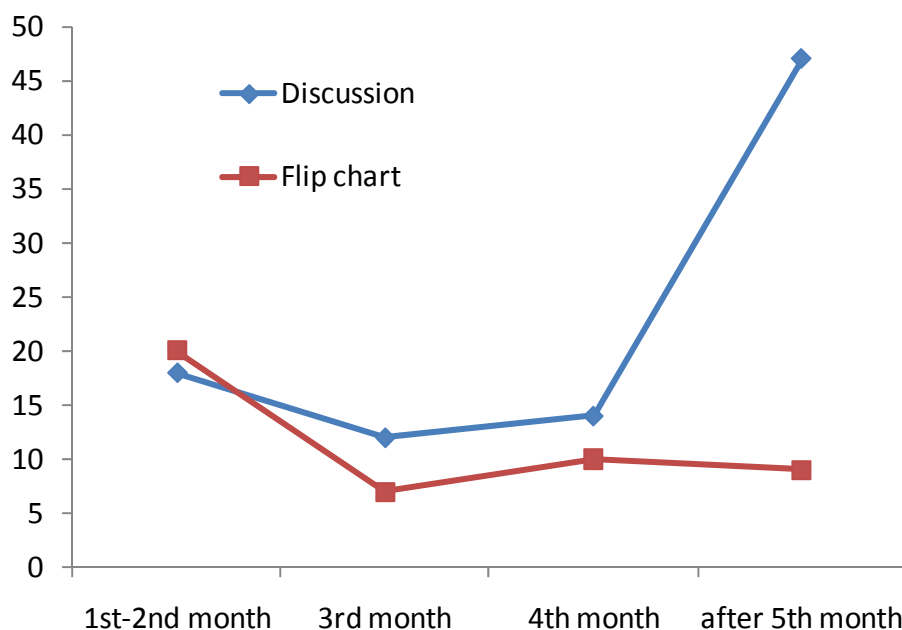


Figure 6.2.3(3).3 Important Change in Child Growth Followed by AA/ASC Observed in IEC Session

And some nutritional guidance was given to the mothers too. In order to avoid mistakes that happened during the child growth measurement, an additional training was organized in July August 2007 to allow AA/ASC to master the techniques of nutritional evaluation with the diagram instead of height and weight measurement. The CPSSA nutritional program started from September 2007, and the AA/ASC started their task as coordinators of the program. They undertake children's growth follow-up on 0 to 5 years old children in order to serve food to malnourished one. The evaluation of nutrition, which was difficult for some previous programs, became easier thanks to the AA/ASC use of a diagram.

The remaining problem is the use of a diagram introduced by an American NGO, such diagram is not known in the area.



Height measurement



Nutritional estimation by the diagram

iv) Improvement of health center service and supervision and monitoring of AA/ASC activities by the HC

As mentioned in 2.3.3, the budget allocated for monitoring and supervising is less than 1 % of the total budget. It not an easy task to make monitoring for AA in some areas that are trained by the oasis project and the ministry of health since 2003. The reason is that they are not integrated in the medical plan of the country. For the AA/ASC we have implemented a system that will guarantee the monitoring that is already in the course of action

So 5 month after the training, there was a monitoring at the HC, and then another monitoring was made every 3 month by the homologous. Such procedure is the adopted one seen in the October 2007 report. The low frequency of monitoring is because of the cost of monitoring and the low allowance from drug sales of 5000 um for three months. Table 6.2.3(3).4 shows the monthly allowance of AA/ASC.

Table 6.2.3(3).4 Monthly Allowance for Seling Drugs by AA/ASC

	ADRAR			TAGANT							
	MH	FAR	TIR	NB	EJ	NT	VEW	DWE	LG	SJ	GL
2-3月/Fév-Mars	1,302	1,766	2343	3,519	3,070	2,914	2,128	3,649	6,189	4,631	4,384
4月/Avril	1,541	465	1,938	-	2,368	1,939	1,535	917	2,868	989	1,147
5月/Mai	223	348	2,343	-	2,368	929	1,520	1,027	2,033	901	919
6月/Juin	572	917	3,275	-	1,267	929	1,520	1,027	2,033	901	919
7月/Juillet	1,651	917									
8月/Août	1,488	2,228	3,275								
9月/Septembre	2,112	1,341		3,486	2,580	5,783	5,138	3,663	3,767	7,053	6,830
Total (8mois)	8,889	7,982	13,174	7,005	11,654	12,495	11,841	10,282	16,890	14,475	14,199
Bénéfice/mois	1,111	998	1,647	876	1,457	1,562	1,480	1,285	2,111	1,809	1,775

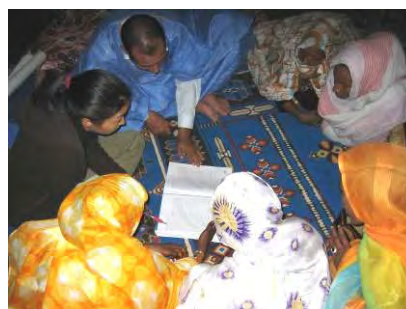
According to the study in Brakna willaya , supply of medicines was the most difficult part of the ASC work since one had to move each time to the main town of the willaya to buy the medicines from the DRPSS with governmental fixed prices (CAMEC). The prices of the medicines in the drugstores are ten times higher than that of the government. Therefore, the combination of these facts made the ASC to fail in his

mission and disappear. Supplying of medicines was a big task for ASC (According the research by the study in Brakna. See report 1) we have implemented a monitoring system that provid drugs also, the indicator in the country show 200 um per treatment and the actual price in the area can be lower than that at the level of the oasis with ministry of health prices

The population of N'Titam fully trust the traditional midwife; putting that into consideration , she was asked by the regional homologous to work in the clinic so that she can be watched and helped in case of need by AA/ASC during his presence from July 2006. AA/ASC lors



Supervising AA and traditional midwives (center)



Exercise to Recording note by the C/P and the nurse

(4) Capacity development of MCPFEF

1) Context and objective

The objective of this program is to promote the capacity development of MCPFEF, as well as reinforce the coordination system regarding female promotion and gender issue among concerned ministries, especially in regional levels.

2) Contents

The following table 6.2.3.(4).1 summarizes the results of these activities.

Table 6.2.3.(4).1 Summary of the Activities related to Capacity Development of MCPFEF

Item	Activities	Period
1. Capacity development related to coordination /collaboration on female promotion	(ア) Execution and coordination of regional steering committee	According to the necessity
	(イ) Execution and coordination of regional technical committee	During the field activities
	(ウ) Execution of training on female promotion and gender for regional administration	June and November 2006

Item	Activities	Period
and gender	(一) Preparation and elaboration of the Action Plan	June – December 2007
2. Capacity development of MCPFEF regional office	1) Arrangement of logistics (regional office)	June 2006
	2) Capacity development related to PC skills, arrangement of data, elaboration of various reports.	Throughout the year
	3) Follow-up of regional office by central staff	Throughout the year
	4) Reinforcement of capacity through trainings and seminars	According to the necessity
3. Monitoring and evaluation	1) Baseline study and midterm evaluation	May 2006 and February 2007
	2) Final evaluation	November 2007

i) Capacity development related to coordination/collaboration on female promotion and gender

<Coordination by MCPFEF and collaboration>

Beginning the commencement of the project, the steering committee was set up for discussion and coordination among concerned administrations. The role of the committee is to monitor and coordinate the pilot projects, as well as to look for the coordination system concerning female promotion and gender in the oases development.

During the third year, the pilot projects were mainly carried out under the initiative of MCPFEF. The execution system of Action Plan (capacity of planning, execution and coordination) was also examined under the initiative of MCPFEF. Especially, the MCPFEF took initiative to organize the pilot projects in the oases after May 2007 while collaborating with MAE and MS.

<Training and workshop on gender and female promotion>

In March 2006, the initial training on female promotion was organized. Then the follow-up meeting of this training was carried out in June 2006 as well. The purpose of these training and follow-up were to promote the female promotion and gender issue in the oases development. The targeted participants were the regional staff of concerned ministries and members of PDDO and PDRC.



Later on, “the workshop on gender and oases development” (November 2006) was organized to raise the awareness of regional staff concerning gender and female orientation in the oases development. In this workshop, PCM method was utilized to analyze the gender problems and then elaborate the simple plan of the activities in

order to resolve the gender issue in oases.

<Preparation and elaboration of Action Plan>

During the third year, the project had focused on verifying the activities in progress and identifying their problems to reflect them into the Action Plan. In this context, the programs and the execution system were examined through the pilot projects under the initiative of MCPFEF. The elaboration committee of Action Plan was set up within the MCPFEF. The direction of management of studies, cooperation and follow-up took initiative of elaboration of the Action Plan.

In October 24-27, 2007, the workshop on elaboration of Action Plan was organized by gathering the members of the committee and the counterparts at regional levels (MCPFEF, MS and MAE) with total of 15. During this workshop, the participants examined the tasks of each ministry, the contents of activities, the number of intervention sites, and the period of execution.

ii) Capacity development of MCPFEF regional office

<Arrangement of logistics>

The office equipments such as telephone, fax, computer and printer were installed in the two regional offices in Adrar and Tagant to establish the basic logistics. Regional offices also set up electricity and telephone line.

<Capacity development concerning elaboration of various documents>

A support for the data-processing and the elaboration of various documents were carried out for the personnel of regional offices. The project brought a support for arranging cooperatives' data in order to systemize the support for women. During the third year, the regional staffs were asked to elaborate a mission report so as to reinforce the capacity of documentation.

<Follow-up of regional office by central staff>

Since the follow-up system, which connect the regional office and central office, was neither well defined nor clear, the project tried to select the people in charge of support to regional office. In the third year, the central and regional office got to work together to make an overall activity plan. Regarding the monthly plan, first the regional office submit their plan, then the central and regional office worked together to finalize it. The follow-up system made by central staff to regional office was finally reinforced through these activities.

<Reinforcement of capacity through trainings and seminars>

The capacity development of regional staff was reinforced through several trainings

and seminars as shown below.

Table 6.2.3.(4).2 Summary of Capacity Development of Regional Staffs

Item	1. Training on extension and expansion	2. Workshop on gender	3. Seminars on improvement of living condition
Objective	To acquire necessary knowledge and method towards the execution of income-generating activities and the support for female organization.	To improve knowledge and consciousness related to gender and support for women in order to make full use of them in the oases development.	To learn concept, approach and acquire the practical capacity related to improvement of the living condition.
Responsible	MCPFEF, MAE, Project member	MCPFEF and Project member	MCPFEF, concerned administration, Project member
Participants	MCPFEF regional staff, AVB of MAE	Concerned administration, and MCPFEF regional staff	Concerned administration, MCPFEF regional staff
Period	June 2006 (3 days)	March, June and November 2006	June and July 2006

<Reinforcement of regional coordination system >

As mentioned previously, the regular coordination meetings with the personnel of MCPFEF, AVB of MAE, counterparts of MS, and personnel of PDDO were organized. During the second year of study, the quarterly meetings in Adrar were organized. Then in the third year, the meetings aiming for review and development of activities were organized each time when they had a mission. Through these meeting, the capacity of coordination system was reinforced on the regional level.



MCPFEF regional director becomes chair of technical committee. In this meeting, the various activities were coordinated.

3) Result

The results of this pilot activity can be summarized in the following two points: i) coordination and collaboration capacity development regarding support for women, and ii) reinforcement of operational capacity of MCPFEF regional office.

i) Coordination and collaboration capacity development regarding support for women

It can be summarized as follows.

<Raised awareness of administration staff and clarification of the topics to be solved>

- Knowledge and consciousness of administration staffs towards gender were improved (45% had not have gender knowledge before the training. The

degree of consciousness is improved after the training).

- The topics related to gender which require to be solved jointly among ministries and the sectorial problems were highlighted.
- With regard to the support with female activities, coordination system between MCPFEF and other technical departments were clarified. The role of each service was highlighted.

<Coordination capacity>

- The shared role among actors was clarified, and the joint operations (coordination) among actors concerning support for women were carried out.
- Joint work at the regional level was undertaken.

<Clarification of structure of collaboration>

- The importance of collaboration especially at the regional level was highlighted.
- The collaborative relationship between MS and MCPFEF, MCPFEF and MFA and the role of each have been clarified through pilot projects.
 1. The MCPFEF must have an agreement on the training of existing AA with MS at the central level.
 2. The MCPFEF must have an agreement with the central level MAE to get technical assistance from AVB and identify concrete methods of assistance with the Regional Delegation of MAW.
- The structure of execution and collaboration within the framework of the Plan of Action have been clarified. The support system covering the different levels (central to the oasis) tested in the pilot projects will be applied in the implementation of the Plan of Action.
 1. Install the steering committee at the central level (MCPFEF, MS, MFA, PDDO, PDRC) under the initiative of MCPFEF to confirm the role of each and coordination of the entire Plan of Actions.
 2. Installing the regional technical committee (Regional Coordination of MCPFEF, unit training AUC MS, AVB, PDDO and PDRC) under the initiative of MCPFEF with a view to coordinating technical activities of the Plan of Actions or with others intervention projects.
 3. The MCPFEF install the PMU in the Coordination department, which involves in management of the entire Action Plan and support to regional offices.
 4. However, the strengthening of capacity for coordination of regional offices is necessary, and given their current situation the central government will provide assistance at the beginning of activities.

Basically, the programs of support for women (in the field of agriculture, health, income-generating activity, improvement of the living condition, and support to

female organizations) are confirmed during the Action Plan. These programs will be operated mainly by MCPFEF whose job is focused on support for women and female organizations.

ii) Reinforcement of operational capacity of MCPEFE regional office

Through the pilot projects, the operational capacity of MCPFEF regional office and personnel were reinforced to ensure the execution of Action Plan. However, it is desirable to strengthen more capacities such as planning/execution/coordination by reinforcing the system of follow-up carried by central staff. The seminar on improvement of living condition also will be useful occasions to send central staff and external experts in order to reinforce the capacity of unfamiliar field of development for MCPFEF regional staff.

6.3 Final Evaluation of the Pilot Projects

6.3.1 Overviews

(1) Objectives

The objectives of the pilot projects are to prepare an Action Plan for women support achievable through lessons acquisition and impact, and strengthen the capacity of the persons in charge of running the extension administrative structure for women support. To conclude the activities during two years, a final evaluation of these activities took place in four model oases between the 4th and the 10th of November 2007, and put in order the results achieved and the challenges ahead, taking into account the objectives stated above.

(2) Methods and points of evaluation

The final evaluation should be carried out through the following two points. The first is the review of results or impacts of the activities on the residents and the second is examining the status of ceating the structure of the extension and the capacity building of staff in charge of the activities. Finally, these issues have been put in order with 5 points of evaluation.

1) Pilot projects

As shown in Table 6.3.1.1, a survey of 3 groups was carried out with questionnaires prepared in advance. This survey was conducted by the Regional Coordinators, the AVBs, the regional counterparts of the MOH and the study team. The result of regular monitoring has been used for quantitative analysis. As for the results of the local health activities etc. conducted by the AA / ASC, the data already acquired were under

evaluation.

Tableau 6.3.1.1 Survey Methodology for the Final Evaluation

People interviewed	Survey method
Women leaders and AA /ASC	Panel discussion bringing together 8-17 people in each oasis. The respondents in 4 oases are 56 in total
Representative of AGPO / residents, village chiefs	<ul style="list-style-type: none"> The survey consists of individual interview with the total number of those interviewed being 16.
Inhabitants	<ul style="list-style-type: none"> Investigate separately as the people are scattered. Having interviewed a total of 68 people (men and women, half / half)

The evaluation of the pilot projects was made with viewpoints of «the status of contribution to the improvement of living conditions and poverty reduction» and «the status of the contribution to strengthening of the capacity in relation to gender and women support.» The indices listed in Table 6.3.1.2 were used for analysis.

Table 6.3.1.2 Expected Results of the Pilot projects and Evaluation Indicators

Expected results	Evaluation indicator
Improvement of the living conditions for inhabitants	<ul style="list-style-type: none"> The life of women (and others) is improved owing to the diversification of productive activities, the AGR, the improvement of health or the organization of women groups. The basic health service is assured. Assistance to childbirth is possible.
Activation of productive activities and improvement of techniques and health activities	<ul style="list-style-type: none"> The activities of women's groups are becoming more active. The production activities are diversified (agriculture, poultry farming or AGR). Knowledge and techniques relating to the agriculture, the improvement of living conditions and the AGR are improved. The capacity relating to marketing in the areas of agriculture, improvement of the living conditions, AGR and acquisition of equipment is improved. The organizational capacity for the execution of agricultural activities, the improvement of living conditions and income-generating is improved.. Knowledge and techniques relating to the sustainable management of resources are acquired. People change their behaviour towards health and hygiene.
Improvement of the self-sufficiency rate and improvement of nutrition	<ul style="list-style-type: none"> The products that can be consumed at the household level are increased The improvement of nutrition and alimentation are achieved by the consumption of vegetables and protein through the cultivation or livestock farming.. The consciousness towards nutrition is improved, and people consume foods taking the nutrition into consideration. The evaluation of nutrition at the local level becomes possible
Increased revenue and spending cuts	<ul style="list-style-type: none"> Revenues from productive activities are generated and increased.. Medical expenses are reduced.
Information useful to the improvement of living conditions and improvement of access to training	<ul style="list-style-type: none"> The information useful to life (health and hygiene / nutrition / production techniques) are available. Information for administrative support of the residents (training organization etc.) are available. Means of request for support (problems of gardening, cases of medical emergencies and so on.) are acquired..

Expected results	Evaluation indicator
	<ul style="list-style-type: none"> • The manuals that provide information pertaining to the improvement of living conditions are available.. • The AA / ASC can transmit information to the residents by exploiting effectively the manuals. • The AA / ASC are helping to solve the weak points of other women (literacy, coordination among organizations etc.). • The women leaders maintain their technical skills using the manuals. • The handbooks / manuals of agriculture and animal farming are used properly and the agricultural and livestock farming activities are assisted.
Organizational strengthening, empowerment and participation of women	<ul style="list-style-type: none"> • The women's activities have been strengthened through the organization setting. • The ability and the organization of women's groups have been strengthened. • Cooperative activities encourage the creation of union. • Women can analyse problems and solutions.. • The awareness of women and their capacitation (empowerment). • The participation of women in development is accelerated.
Training of personnel capable of carrying out the activities for the improvement of living conditions at the local level	<ul style="list-style-type: none"> • The basic medical staff (AA / ASC) with the relevant and accurate knowledge is formed. • The representatives of women's groups were formed as a leaders. • The women activities are helped by trained women leaders.

2) Creation of extension structure for women support

During two years of activity, the possibility of actual implementation or the problems of the extension structure imagined through the pilot projects were examined. And in the third year of the study, it was possible to examine the ability of self-development of the actions undertaken after the end of the study by conducting activities under the initiative of MCPFEF. These points were analyzed with the evaluation indicators shown in Table 6.3.1.3.

Table 6.3.1.3 Results Relating to the Establishment of Extension Structure and Evaluation Indicators

Expected Results	Evaluation indicators
The MCPFEF is given the necessary capacity through pilot projects.	<ul style="list-style-type: none"> • The planning capacity of the MCPFEF staff program is improved. • The capacity of programmes formulation and implementation is strengthened..
The structure of cooperation between the departments concerned necessary for the implementation of the Action Plan is clarified.	<ul style="list-style-type: none"> • The extension line from the central administration to the oasis is built. • The support structure between the regional administration • The role and responsibility of each individual are clarified through the deepening of cooperation between the services concerned.

6.3.2 Contributing to the Improvement of Living Conditions and Poverty Reduction.

(1) Activation of the productive activities and Improvement of Techniques

- Activation of the productive activities

The pilot projects where the productivity is improved were i) market gardening, ii) sewing, iii) dyeing and iv) small businesses. Being familiar to women, the gardening activities were stimulated the most. As for sewing and dyeing which are new techniques for the oases women, these activities have contributed to the diversification of activities hitherto limited.

Table 6.3.2.1 Activities of Women whose Productivity is Improved
(Survey Results for Women)

Activities	Rate (%)
① Gardening	58,9
② Sewing	17,9
③ Dyeing	12,5
④ Small business	10,7
Total	100,0

Source : survey of AA / ASC and leaders of women's organizations in the final evaluation of the pilot projects
(November 2007)

- Activities of vegetable production (increase of production and diversification of speculations)

What has been aimed at in this framework is the contribution to the improvement of nutrition and living conditions through the supply of fresh vegetables within the trained oasis owing to the introduction of useful cultivation techniques for the increase of the production and the improvement of the products quality. Indeed, the production in these oases has been increased. Table 6.3.2.2 shows the production volumes of the 5 main speculations of the pilot farms during the 2006/2007 season. The yield of vegetables such as tomato, eggplant and carrot before the start of the pilot projects was about 10kg/10m², but that achieved by these activities is 3-5 times higher. The residents feel that the vegetable production was doubled. And with the culture in hot summer season which allowed the extension of the harvest period, the harvest of eggplants and tomatoes is extended until July in N'Batt and June in Tirabane (crop season 2007).

The Pilot projects were carried out normally with only materials available in the area. However, when compared with the targets set by CNRADA in its manual, production of tomato, eggplant, carrots and cabbage has reached this target level whereas onion product was low (see Table 6.3.2.2). But if one takes into account the fact that the target volumes specified by the CNRADA are calculated for the production with chemical fertilizers or pesticides, the result this time demonstrates that it is possible to achieve a certain level of production solely with materials available in the oasis. And as shown in Table 6.3.2.3, agriculture is diversified thanks to the start of cultivation practice of vegetable that were not previously existed.

Table 6.3.2.2 Production of the Main Vegetables in the Trained Oases
(2006/2007)

Unit	Oasis	Tomato	Eggplant	Cabbage	Onion	Carrot
kg/10m ²	N'Batt	25,5	73,2	24,56	20,14	8,89
kg/10m ²	N'Titam	19,71	67,85	18,67	13,44	21,25
kg/10m ²	Tirabane	41,77	24,17	5	4,33	13,64
kg/10m ²	CNRADA	30-40	50-120	20-30	35-45	20-30

Table 6.3.2.3 Evolution of the Cultivation Speculations in Oases
(Comparison with Prior to the Study Arrival)

Oasis	No. of speculation	Speculations cultivated before pilot projects	No of speculation	Speculation cultivated by November 2007
N'Batt	2	Tomato and Onion	9	Tomatoes, eggplant, cabbage, carrots, beets, turnips, radish, pumpkin, onion
N'Titam	4	Tomato, cabbage, onions and carrots	9	Tomato, cabbage, onion, carrot, pumpkin, okra, lettuce, turnips and eggplant
Tirabane	3	Carrots, tomatoes and cabbage	10	Carrots, tomatoes, cabbage, turnips, pumpkin, okra, onions, eggplant, lettuce, beet

(2) Improvement of self-sufficiency rate and nutrition

- Increase in domestic consumption and diversification

Two changes in the feeding habit have been noticed during this evaluation. The first consists in the increase of domestic consumption and the second to the diversification of food. Member of Women's group participating in the market gardening activities have said that vegetables are primarily consumed in households and the surplus vegetables are sold in their oases (N'Batt and Tirabane), that the volume of domestic consumption increased following the increase in production due to improved cultivation techniques (N'Titam, N'Batt, Tirabane), and that the productivity and quality were improved with the same acreage (N'Batt).

Table 6.3.2.4 shows the rates of domestic consumption and commercialisation of vegetables before and after the pilot projects (Winter Campaign 2006 and 2007). In Tirabane where people rather aimed at commercialisation, domestic consumption has increased by 12 percentage points (from 20% to 32%). By contrast, domestic consumption of N'Titam dropped by 10 points.

Table 6.3.2.4 Rate of Domestic Consumption and Marketing
(Winter 2006/2007)

Oasis	% Of domestic consumption		% of commercialisation	
	Before pilot activity	After pilot activity	Before pilot activity	After pilot activity
Tirabane	20	32	80	68
M'Batt	-	50	-	50
N'Titam	90	80	10	20

Note : The status of productive activities prior to the pilot activity of the women group of N'Batt being stagnated, accurate data are not available

The result of the investigation for searching the reason for decline in domestic consumption in N'Titam is shown in Figure 6.3.2.1. The loss in volume of each vegetable being decline, the products are more efficiently used. In addition, the rate of domestic consumption of cabbage, eggplant, tomato or onion (leaves) and the commercialisation of carrot, eggplant and onion (leaves) have increased. Especially eggplants for which a considerable amount was abandoned, are better used for domestic consumption, processing and commercialisation.

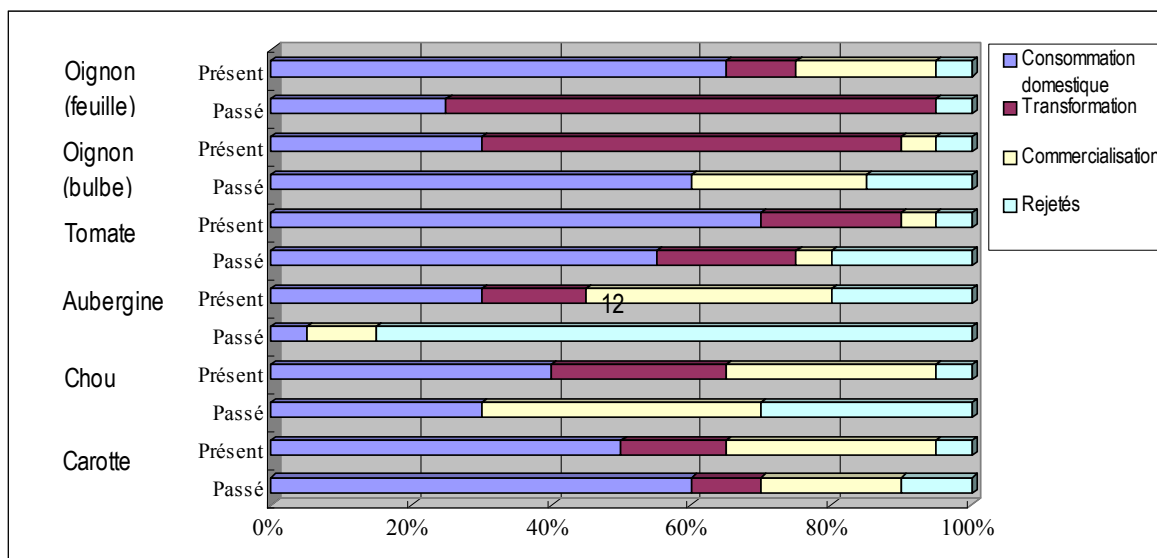


Figure 6.3.2.1 Evolution of Production before and after the pilot projects in N'Titam

The response given on questions asked regarding diversification of food are as follows. Meals are best with vegetables (Tirabane and N'Titam women). They understood that eggs and meat are useful even though they thought that the poultry are animals without hygiene (Tirabane women). They knew that there were fish in the pond, but they do not eat because of bad smell. But with the training, they understood that fishes are good. As fishes are cheaper than meats, they have begun to eat them (women N'Titam). All these answers are reinforced by the facts on the decrease in night blindness (N'Batt), fewer illnesses in children or better health (Tirabane). In addition, an example of commercialisation of frozen poultry is noticed in the oasis shop owing to the acceptance of white meat as convenient food. The sale of fish in the oases by an ex-fisherman (N'Titam) or the drop in eggs prices from 50 to 30-40UM thanks to the practice of spreading poultry farm (Tirabane).

The following items relating to the strategy of vegetable consumption adopted by Tirabane women were highlighted through pilot projects.

- Women who have more experience of gardening consume a wide variety of vegetables like salad or cabbage. Similarly, they consume more dried vegetables.
- The fresh vegetables are no longer available after May. Therefore dried vegetables or beans are consumed. There is even a period in which vegetables are not consumed at all.
- One produces or buys the dried vegetables.
- They try to consume on daily basis either fresh or dried vegetables, or beans throughout the year.
- People who can not afford to buy dried vegetables consumed beans.
- Women who do not practise vegetable gardening consume vegetables by buying or receiving them free of charge.

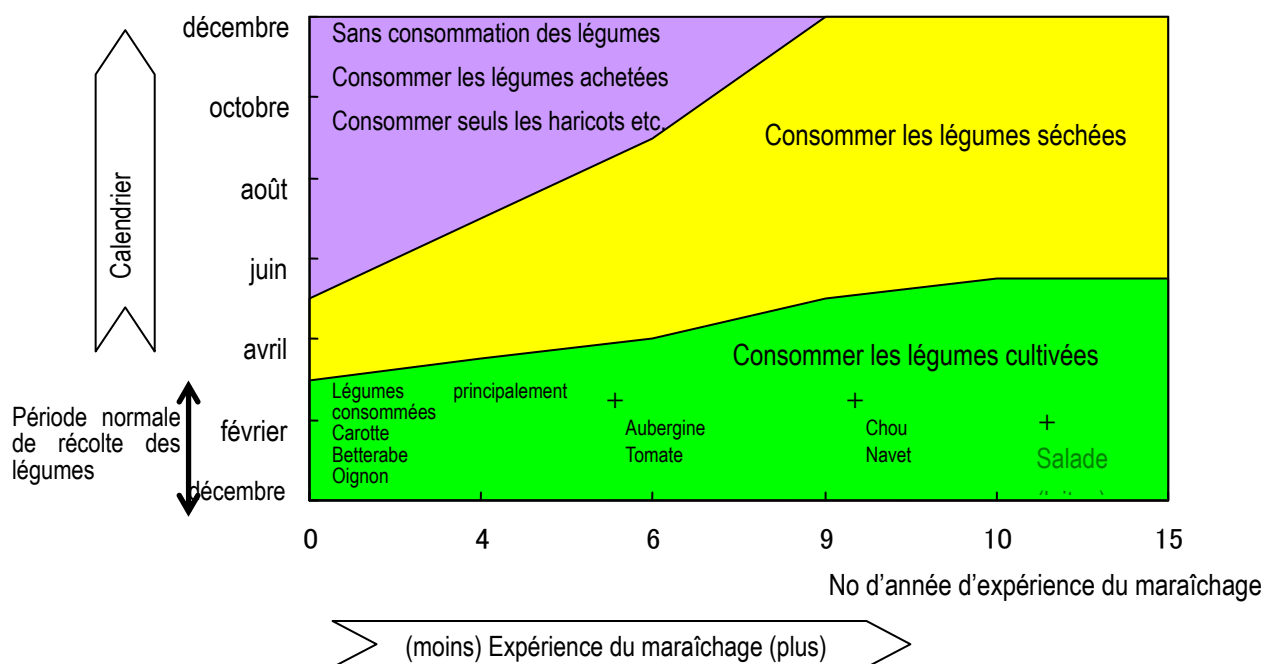
Above are examples of Tirabane and it is necessary to carry out the following two strategies to ensure household food security and improve nutrition through vegetable production.

Strategy 1 : Extend the period of vegetables cultivation (in the direction of the arrow on the schedule below)

Promote off season gardening through the provision of shade and basket cultivation (used tires)

Strategy 2 : Increase the number of people with gardening experience (extend the year of gardening experience in the calendar below to the right)

Residents who do not practice vegetable gardening consume small variety of vegetables during only half of the year. The project aim to increase the number of



people with gardening experience as the consumption of vegetables increases if people practice the gardening themselves.

Figure 6.3.2.2 Relationship between Experience Years and Vegetables Consumption Trend

- Evolution of nutritional status

Despite the response frequently given, «the nutritional status of children has improved», at the time of this investigation, the relationship with the result of short-term activities is uncertain. This response was given from the feeling of improvement on feeding life or education on nutrition.

As for the eggs consumption, the Oasis inhabitants in Mauritania have no experience of eating eggs. The eggs are usually given to children when they are sick.

(3) Increase of incomes and improvement of living conditions

- Improvement of the living conditions

Many women feel that "life is better" through pilot projects. Even though the various living conditions are improved, women feel the following improvements: i) improvement of nutrition, ii) improvement of health, iii) increase in income and, iv)

food insurance.

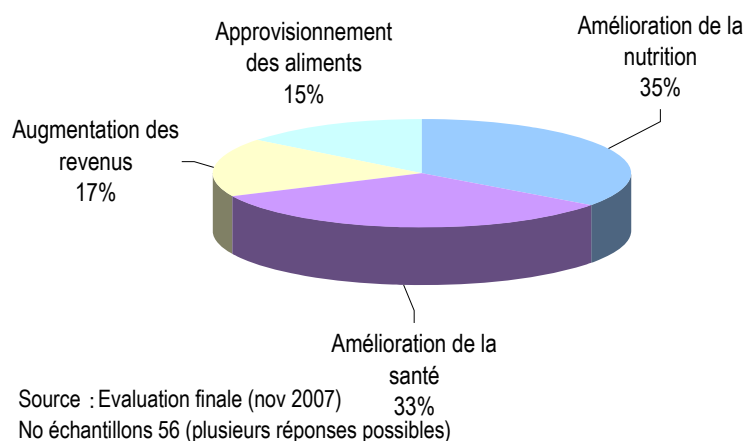


Figure 6.3.2.3 Points where Women Feel Improvement

The answer most frequently given on the improvement of nutrition seems to be through the following: i) food for domestic consumption is provided from gardening and poultry, ii) the consumption of vegetables or protein sources such as eggs, meat or fish that were not previously consumed is now possible through the support for the improvement of living conditions, and iii) the change of behaviour towards nutrition or drinking water through community health activities or IEC conducted by the AA / ASC. As for the improvement of health and food insurance similar effects were given.

On the other hand, the third point which is income increase seem to result from the commercialisation of dye (veil) or sewing thanks to the learning of new techniques and knowledge by women who did not receive training opportunity or support in addition to limited activities of market gardening and small business.

- Changes in domestic spending by increasing incomes

The techniques of dyeing and sewing learned through the AGR training, have allowed the manufacture and recycling of clothing (men boubou and women veil). They also made available clothing for children in these oases where people had to go to proximity oases or big city markets. And the activities of gardening and poultry farming have improved the commercialization in addition to the domestic consumption of the products.

According to the discussion made with target groups, the benefits of income-generating activities are used to i) the purchase of food, ii) improvement of health through the purchase of medicines, iii) the education of children, iv) spending for children and the family, v) investment in AGR, and vi) housing (see Figure 6.3.2.4). It is about improving basic human needs.

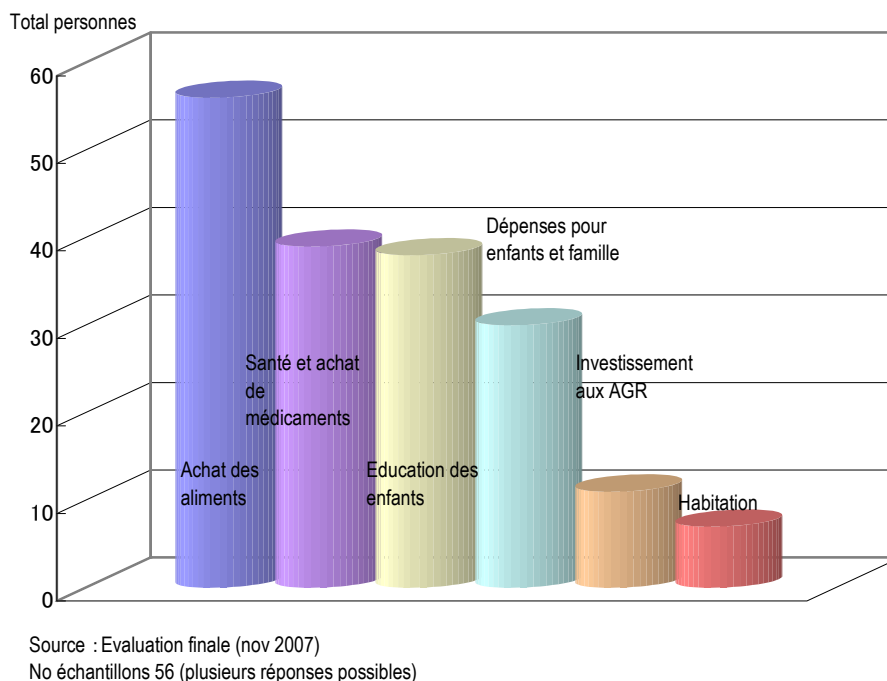


Figure 6.3.2.4 Uses of Profits obtained through AGR

- Generating income and spending cuts by the gardening and poultry farming..

Table 6.3.2.5 shows the turnover of the vegetables commercialisation. The prosperity of gardening within the oasis has also helped reduce costs for the purchase of vegetables and transportation as people no longer need to purchase vegetables elsewhere.

Table 6.3.2.5 Income from Vegetable Sale in each oasis (normal 2006) in UM

Oasis	Income obtained by JICA plot	Number of Participants
Tirabane	23.900 UM	15
N'Batt	23.000 UM	10
N'Titam	31.000 UM	60

A portion of these profits is saved as group activities fund and the rest is shared by the group members. The vegetable gardening activities being the oldest among the women's organizations activities that are most profitable, many members wish to pursue them more actively. The vegetable of Tirabane farm are sold at Atar, Aoujeft (capital of Moughataa) and within their own oasis and those of N'Batt and N'Titam are sold within these oases. The visitors of the N'Titam oasis often buy these vegetables.

This poultry were sold between 1000 and 2500 UM. Profit per unit with the poultry is higher than that of gardening.

Figure 6.3.2.5 shows the benefits obtained by 7 households who began practicing the poultry farming after the demonstration of

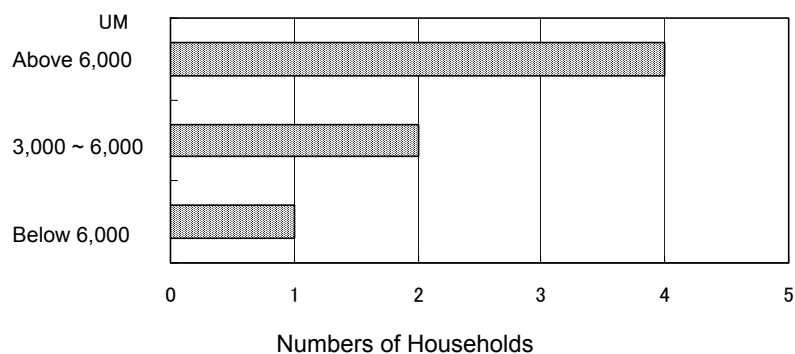


Figure 6.3.2.5 Numbers of Households per Poultry Price

January 2006. These poultries were sold within the oasis or the proximity oases. Approximately 40% of all households in this oasis start poultry farming as of November 2007. The commercialisation of meat and eggs are stagnating. The household which has sold more poultry, earned about 25000UM by selling about 15 chickens. And there are those who have sold 7 eggs per week (profit of 420 UM/60UM per unit). Mauritanian are accustomed to slaughter sheep (goat) when welcoming guests. But with the extension of poultry farming which could eventually replace the sheep, people could save (depending on the mid-term evaluation). Thus, the impact on domestic consumption is not negligible.

It was in Tirabane where the activities of dyeing became vivid the most rapidly with the two groups that carry out the activities. The activities were initiated after June 2007 in M'Haireth and N'Titam, thus the period of commercialization is different. The groups of Tirabane commercialise in the oases of proximity and that of M'Haireth to tourists visiting the oasis. But the groups of N'Titam and N'Batt of Tagant are still unable to sell outside their respective oases. The cost for group activities in Tirabane from January to May were 30,000UM (Tirabane 1) and 51,900UM (Tirabane 2) respectively and cost share to the income is about 40%.

Table 6.3.2.6. Amount of Sales of Dyeing and Sewing Products

Oasis	january~may 2007		july~november 2007	
	No. of units sold	Amount of sales UM	No. of units sold	Amount of sales UM
Tirabane 1	107 ¹⁾	50.980		
Tirabane 2	98 ¹⁾	86.950	37 ²⁾	24.100
M'Haireth			31 ³⁾	43.350
N'Titam			93 ⁴⁾	22.280
N'Batt			4 ⁵⁾	3.800

Note 1) Only the dyeing

2) 23 pieces dyed (13.500UM) et 14 clothing (10.600UM)

3) 18 pieces dyed (24.850UM)、 13 clothing (18.500UM)

4) 75 pieces dyed (9.500UM)、 18 clothing (12.780UM)

5) only clothing.

- Reducing medical fees through the provision of basic medical service by the local human resources.

The training of AA / ASC has allowed prenatal consultation for pregnant women or assistance in childbirth within the trained oasis. Medicines available to residents at low prices set by the government through these AA / ASC have reduced medical costs to less than 10% compared to prior fees hitherto 6000 to 25000 ouguiyas. The medical environment developed owing to the strengthening of health posts through material provision by JICA and the Japanese Embassy in Senegal has led to the vaccination of all children in the vicinity. Wednesdays being set as the days of vaccination in N'Titam, many mothers with children meet at the health post of this oasis every Wednesday morning. And the introduction of radio communication system (RAC) has allowed the reception of medical information every morning (the epidemic, etc.) and the transmission of problems relative to agricultural field to the AVB MAE (N'Batt).



Queue of mothers awaiting vaccination
(in front of the health post of N'Titam)



Fence for the protection of the radio system
(N'Titam)

(4) Empowerment of residents and improving conditions of everyday life

- Sensitization and extension (IEC) and change in ideas





The activities of sensitization and extension have been carried out as one of the measures of empowerment of inhabitants within the framework of this study. The activities were carried out by AA / ASC that are both inhabitants of the oasis in the form of flipchart, meeting or discussion (see 6.5.3 (2) 3)). Thus 185 activity meetings (70 in Adrar and 115 in Tagant) were carried out during the period of 9 months by gathering a total of 1675 people (626 in Adrar and 1049 in Tagant). Participants took part in activities where the topics were " women right and the relationship between family members", "nutrition", "causes and prevention of diseases", "importance of vaccination" and "information relating to the reproductive health" . The fact that executing the health actions learned (washing hands or sterilizing drinking water) by the IEC activities, the change of ideas (awareness) among people has been given as the people feel that "the frequency of diarrhea or fever in children has been reduced (N'Batt men);" " the people who only believe in traditional treatments (mostly elderly) come to receive medical care or assistance to the childbirth once they understand the efficiency of the activity of AA (Tirabane of men);" and " the assistance in childbirth becomes a common thing (N'Titam women)."

These changes did not appear immediately after the start of the sensitization activities. For example, the sterilization of water through chlorination, which was the first sensitization activity by the AA / ASC, has not been favorably welcomed by the residents because the smell or the taste at the beginning was not accepted. But recognizing the effectiveness of the activities carried out by the AA / ASC or watching these AA / ASC sterilizing water in their homes, the inhabitants have understood and begun to practice 7 months later (AA / ASC of Lemgeuita / N'Titam).

- Sensitization and Extension (IEC) and change of behaviour

The change of consciousness (awareness) is linked to the activities. The people spontaneously bring change in their activities even though it is through small actions, most frequently by washing the bodies of the children (2 times per week instead of once a month: El Jal / N ' Batt woman) or by washing the face and eyes of children more frequently for the prevention of eye disease (El Jal / N'Batt woman).

The construction of toilets is increasing as one of hygienic activity. But being caused on the one hand by the arrival of outsiders as tourists due to the construction of roads, this is not necessarily the impact of health education, which took place in the context of the present study . As a matter of fact, one can see an example of the construction of public toilets as one family can not afford the cost of building one (El Jal / N'Batt)

			
<p>Elevated toilets The feces are exposed to the air (September 2005 in M'Haireth)</p>		<p>Toilets with pit built nearby elevated toilets (October 2007)</p>	<p>Public toilets (October 2007 in N'Batt)</p>

6.3.3 Contribution of the Gender Aspect and Women's Capacity Development

(1) Better access to useful information/training towards improvement of living condition

The improvement of access to useful information/training is one of the important steps for women to participate in the oases development. Access to information/training was improved in various forms through the pilot projects (see the table.6.3.3.1). Those various supports were often brought by local administrations and leaders. The improvements of access result in promoting the spontaneous activities of women, and improvement of women's capacity, while satisfying the basic human needs of women.

Table 6.3.3.1 Improvement of Access to Information by Training and its Results

Contents of activities	Improvement of access
<ul style="list-style-type: none"> • Expansion and extension activities by administration services • Training organized by administration services 	<ul style="list-style-type: none"> • Women can reach information and training (agriculture, health and hygiene, nutrition, improvement of living condition, and income-generating activities)
<ul style="list-style-type: none"> • IEC activities concerning health, nutrition, improvement of living condition carried out by AA/ASC • Community development activities promoted by AA/ASC 	<ul style="list-style-type: none"> • Many illiterate women can access to information through the assistance of AA/ASC. They can also get information through handbooks and guides. • Many inhabitants can get useful information.
<ul style="list-style-type: none"> • Installation of Radio communication at health center 	<ul style="list-style-type: none"> • Women can reach to MAE when they have some problems related to agriculture and chicken-keeping activities. • Women can get information in the case of urgency through radio communication, even with the absence of medical personnel. • Radio can be used in order to diffuse the information at the time of visit of administration personnel.
<ul style="list-style-type: none"> • Elaboration of handbooks and guides 	<ul style="list-style-type: none"> • Women can get useful information concerning health, hygiene, improvement of living condition, income-generating activities, and IEC. • Female leaders can get technical skills and extend/expand these skills with others members, thorough handbooks and guides. • The support of agriculture and chicken-keeping activities becomes easier.

(2) Formation of female leaders and reinforcement of capacity/organizational development

- Formation of female leaders

By positioning the AA/ASC as local focal point, the project entrusted them to initiate various activities of women in respective oasis. For example, it was AA/ASC that has initiated the activities in the oases, such as nutritional cooking, introduction of improved stove, and promotion of income-generating activities. The AA/ASC initiates the activities of improvement of living condition with representatives of female cooperative, as a leader.

The existence of local female leaders allows oases women to i) activate the exchange with enter-organizations, ii) get wider information, and iii) participate in the communality development. The women of N'Titam expressed, for example, that they have been able to receive training/formation by gathering several organizations.

Other also expressed that; “several activities of women initiated by AA/ASC permit reducing social distance between women and AA/ASC; Nowadays, the number of women receiving childbirth assistance by AA/ASC increased (AA/ASC of N'Titam and M'haireth)”. Some also stated that the activities of basic medical treatment done by AA/ASC allow men to have more confidence towards AA/ASC (men from Titam). One also mentioned that the training occasions allowed them to collaborate with other leaders, share and to exchange information/experiences (AA/ASC of M'haireth)”.

- Reinforcement of capacity/organizational development

The capacity and organizational development of female cooperative has been improved through the support to female organization. Table 6.6.3.2 shows that several changes appeared, such as capacity and the organizational development, collaboration between the organizations, and spontaneous female activities. The changes of female organizations are reconfirmed in the following domains; i) activities of women, ii) problems-solving capacity, iii) organizational capacity, and iv) collaboration among female cooperatives.

Table 6.6.3.2 Improvement of Capacity and Organization Development

Period	1. Activities of women	2. Problems-solving capacity	3. Organizational capacity	4. Collaboration among female cooperatives
Before the pilot projects	<ul style="list-style-type: none"> Limited activities (limited quantitative and diversification) Only seasonal activities 	<ul style="list-style-type: none"> Very limited capacity on problem-solving Depend on men or third people's assistance 	<ul style="list-style-type: none"> Very limited comprehension on role of organization (cooperative) No control of bookkeeping Few female cooperatives were officially registered 	<ul style="list-style-type: none"> No existence of Union. Each cooperative undertook their activities separately. There were many cooperatives in an oasis.
Beginning and halfway of pilot projects	<ul style="list-style-type: none"> Cooperatives have received necessary trainings and support to promote their activities. 	<ul style="list-style-type: none"> Raised consciousness regarding their role and responsibility 	<ul style="list-style-type: none"> Cooperatives were more organized than before. Women started to register their cooperatives. Beginning of organization and management which is characterized by the notes in the books (incl. bookkeeping). 	<ul style="list-style-type: none"> Exchange of information among cooperatives started. Reunification of small cooperatives. Tendency to create a Union of cooperatives.
Present	<ul style="list-style-type: none"> Their activities became more dynamic Diversification of activities and products. Possibility of undertaking activities throughout the year (long-term) 	<ul style="list-style-type: none"> Auto-resolution capacity gradually increased. Women started to solve the problems themselves. 	<ul style="list-style-type: none"> Women recognized an importance of organizational activities. 90% of cooperatives were registered or on progress. Account book are arranged. 	<ul style="list-style-type: none"> Creation of a Union of cooperatives. Execution of common activities in collaboration with other cooperatives (dyeing, sewing, and small trade).

(3) Raised awareness and empowerment of women

The project provided several training opportunities for women whose participation was limited, as well as for female leaders. Especially on the improvement of living condition, the project promoted spontaneously with self motivation rather than waiting outside helps. Then, raised awareness of women has been reconfirmed through diversifying and widening their activities after the training. Women said; “we understood that we can improve our living condition by ourselves” (female leaders of N’Titam and N’Batt).

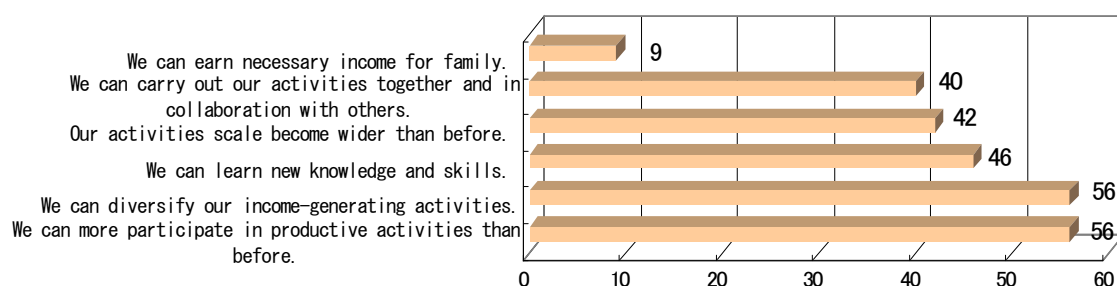
- Raised awareness of women and evolution of their satisfaction level

The change of happiness or satisfaction have an important factor to understand improvement of women’s situation and empowerment of women. According to the focus group discussion, many women expressed that they had become more satisfied after having participated in income-generating activities and received the training/support of production skills.

The reasons that they quoted most often are; “we can participate more in the productive activities” and “we can diversify our income-generating activities”. Activation/diversification of their activities as well as promoted participation of women brought their greater feelings of satisfaction. The encouragement of family also brought their satisfaction.

In addition to above-mentioned reason, women focused on saying; “we can learn new knowledge and skills. That makes us more satisfied”. That means that participating in the training/formation seems to provide the opportunities not only to acquire the knowledge and skill, but also to raise their awareness and satisfaction. Most of them had very limited opportunities to participate in training/formation before.

They also pointed out their satisfaction reasons as; “our activities have become wider” and “we can promote our activities in collaboration with other cooperatives”. These expressions show that women have become more capable of developing their wider activities by collaborating with others and joining together.



Source: Final evaluation (Nov. 2007) N=56 (multiple answer possible)

Figure 6.3.3.1 Reasons of Satisfaction to Participate in the Income-Generating Activities

- Empowerment of women

To measure the empowerment of women, 12 questions (see the figure 6.6.3.2) were asked to the participants during the focus group discussion, whether they observe their change or not.⁶ The numbers in the following figure are the rates of women who agreed that they had changed.

As the following figure shows, many participants answered yes for the indicators “participated”, “worked jointly”, “collaborated with others”, “created” and “obtained self-confidence,” they confirmed their changes. These results show us that women

⁶ The indicator of empowerment for 12 categories is referred to the following report “a study of statistics, indicator, and evaluation on women’s empowerment” Yoko Fujikake (2003), JICA

experienced their change as: 1) “*perceptual change*” that indicates increased self-confidence and raised awareness towards their spontaneous actions, 2) “*relational change*” that implies increased decision-making, increased sharing responsibility, and improved communication with others.

On the other hand, we could not observe a considerable change for the indicators “managed activities and funds” or “negotiated” in all oases. This can be explained by the fact that the pilot projects have just started so women could not have enough time to experience their management or negotiation skills. Thus, all these changes of behavior and consciousness require a considerable time, it is necessary to examine measurements of support on the basis of long-term point of view.

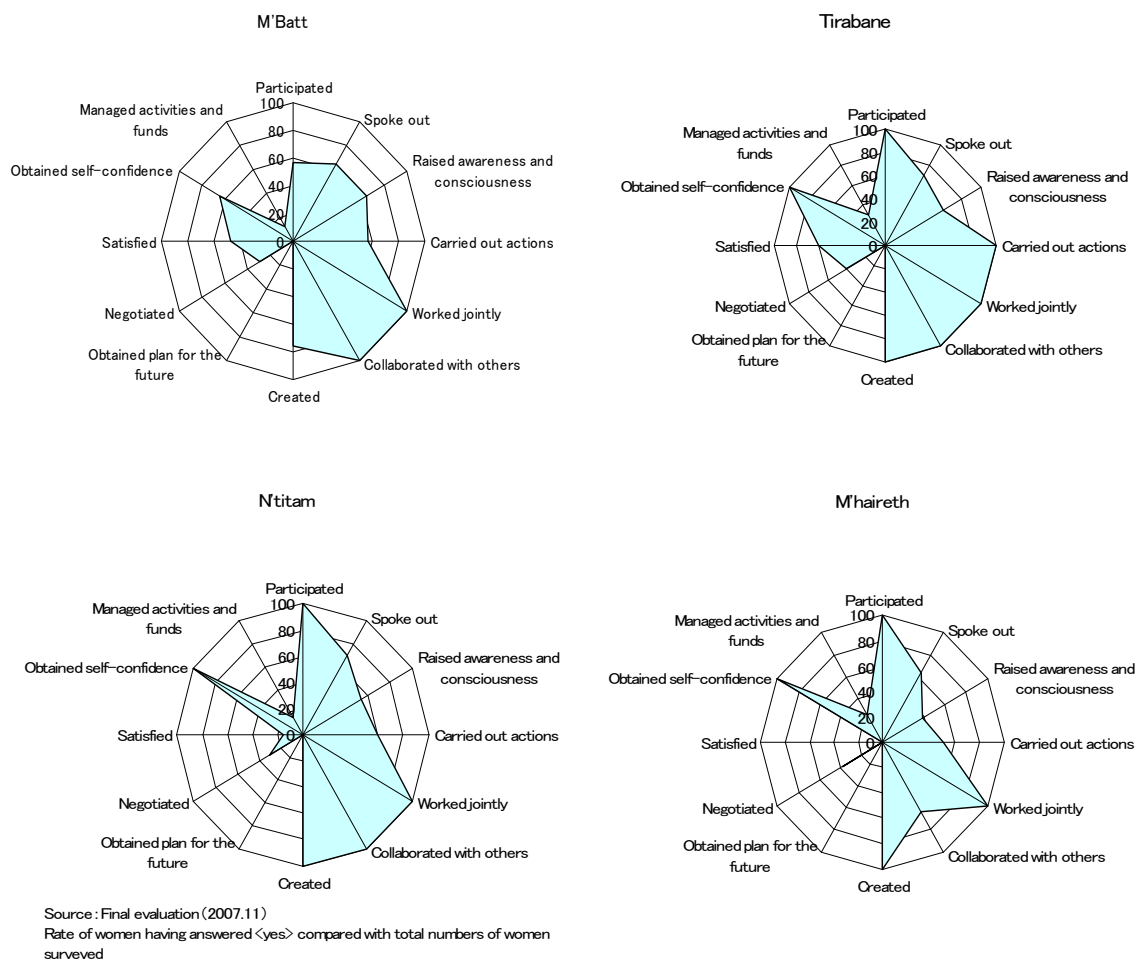


Figure 6.3.3.2 Indicators of Empowerment of Women in 4 Oases

(4) Environmental changes surrounding women

- Increased recognition and appreciation towards women

The pilot projects were mainly targeted for women, however it brought also some increased consciousness of men (husband) towards the women (wives). This change is quite visible when the activities of the women contribute to the household economy.

According to the final evaluation, the recognition and appreciation of men towards activities of women are as follows; “the acquisition of knowledge and techniques is appreciable. Women’s activities can contribute to not only domestic work, but also domestic economy (Tirabane)”; “the women became more active and independent. They are eager to earn money instead of waiting for men (Tirabane)”, “the women is less lazy than before (Fares/M' Haireth”, “It is formidable that women take actions by making decisions (Tirabane)”.

In addition, there are men who recognize that “women started to take part in the various aspects of oases development by learning various knowledge and skills from health, chicken-keeping, agriculture, handicraft”. Regarding the social participation of women, men say that “these changes are important for the oases (Tirabane and M’Batt)”.

These changes of consciousness can be observed in their behavior as well. We observed, for example, that the AGPO of M’haireth helped a female organization with filling the application for financial aid of the PDRC to purchasing some equipment for dyeing and sewing. Then they finally obtained 1 million ouguiya. Another example is that men have started to support women on physical work during agricultural activities (M’Batt and Tirabane).

- Women’s participation in the community organizations

AGPO is the core institution in the oases development whose members are both registered men and women. Usually the AGPO and its members can benefit from various programs and micro-credit. However, the cooperation between the AGPO and the female organizations were less close or weak at the beginning of the project. As the table 6.6.3.3 shows, the number of women’s participation in the AGPO is increased. The reasons seemed to be as follows; i) women started to carry out their activities in group, ii) women obtained various information and knowledge while registering in the AGPO, iii) women understood that their life can be improved by applying knowledge and skills learned.

Furthermore, the PDDO also modified the internal law of execution office mentioning that the representation of women should increased to 30 % in consideration of importance of women’s participation in the oases development.

Table 6.3.3.3 Changes in the Number of Female Members and Female Organizations in AGPO

Oasis	Female member in the AGPO		Female organization in the AGPO	
	Before the project	November 2007	Before the project	November 2007
N'Batt	12	35	1	4
N'Titam	44	66	7	7
M'Haireth	65	70	2	5
Tirabane			13	13

- Promotion of women's participation in the oases development

According to the final evaluation, all the women who participated in the focus group discussion felt that women's participation in the development was improved through: i) increased participation in the productive activities such as vegetable growing, ii) increased contribution to the domestic economy through income obtained by productive activities and, iii) increased contribution of the women's activities into the community development. All these answers show us that the socio-economic participation of women in the activities of the oases is accelerated and in full progress.

6.3.4 Improvement of the Extension System for Support to Women

In the pilot projects, the project carried out several activities such as, i) improvement of agricultural production, ii) introduction of income-generating activities, iii) improvement of health and hygiene, iv) reinforcement of female organizations, in order to deal with the development problems related to gender.

In the execution of Action Plan, MCPFEF will take initiative to determine the orientation of the programs that cover the multiple fields, and carry out the programs in narrow dialogue/coordination with MAE and MS. In this context, during the third year, the pilot projects were undertaken under the initiative of MCPFEF in order to examine the feasibility of the structure suggested in the Action Plan.

We summarize here the results as well as problems highlighted after the pilot projects as follows; i) capacity development of MCPFEF, ii) the degree of establishment of administrative system for the execution of Action Plan and its problems.

(1) Capacity development of MCPFEF

- Work out a strategy on support for women and gender

In the past, the main tasks of MCPFEF were, in general, the revision of laws regarding female promotion, measurements on the level of the national programs, and execution

of awareness programs on women's rights and human right. Therefore, MCPFEF did not have enough capacity to work out strategy for supporting women in the rural development projects, and to plan and carry out the activities in the field.

Having acquired the knowledge and skills through the on-the-job training and elaboration of the Action Plan, the capacity of MCPFEF on mapping out the strategies of activities was improved. However, to implement the Action Plan smoothly, it is necessary for MCPFEF to revise their orientation after having analyzed the impacts of activities. These flexible capacities still remain to be reinforced for MCPFEF. It is thus desirable to reinforce the capacity through seminars on the improvement of living condition and carry out the activities by asking a support from external expert to fill this insufficiency of capacity.

- Capacity on planning and execution of activities

Activities will in general have to be planned and carried out on the basis of strategy mapped out. In the past, however, the capacity of planning and execution of activities as well as the execution structure between central and regional office were insufficient and unclear.

It can be said that the capacity of planning and execution of activities was accordingly improved to certain level through the pilot projects. The development process and execution of activities plan was elaborated in coordination between regional and central levels. Then based on the activities, the regional office produce the details plan that would be finalized through feedback processes between central and regional office.

One of the regional offices could well adapt this process. However, the other always depended on the activities plan prepared by the central level without delivering its opinion. Thus, it is necessary to reinforce the capacity through on-the-job training or the seminar to take measures for marinating the above-mentioned system.

(2) Improvement of administrative structure on support for women

- Establishment of execution structure from central to the oases levels

Through the pilot projects, the following activities were executed, such as i) the capacity reinforcement of the regional office carried out by the central personnel, and ii) capacity development of oases women organized by the regional office. It aimed at establishing the administrative structure from central to the oases levels.

At the central level, the project ensured the necessary personnel for the development

and the execution of training that was mainly carried out on the Direction of study, cooperation, and monitoring, and the Direction of female promotion.

At the regional level, the activities of support to the populations were led by using the MCPFEF volunteer who is working in the regional office. The AA/ASC as female leaders as well as focal point of the oases determined to be worked as an interlocutor between the local administration and the oases level. These networks allowed connecting people and institutions from the central to the oases levels.

- Improvement of support structure between the regional administration and the oases population

For the implementation of pilot projects, the volunteer of MCPFEF helped the regional office to fill out lack of personnel during the seminar on improvement of living condition and the activities in the oases. Through this support, the collaboration between regional office and the population become tighter.

This attempt also enabled the project team to know the specialties of each one of these volunteer (dyeing, cooking, IEC on nutrition etc) as well. Furthermore, it gave team the possibility to connect with these people during the Action Plan implementation.

However, there are still problems to be solved for the integration of these female volunteers. Among those problems, for example, there is a need to reinforce capacity in the field of participatory community development.

As for the administrative structure in the oases society, the project tried to establish the support structure by creation of collaboration network among i) the regional office, ii) the health center, and iii) the AA/ASC. As a result, it was revealed that the collaboration network between the inhabitants and the regional administration would be possible through the health center.

The installation of the Radio Communication at the health center was verified to be effective to allow the smooth communication between the inhabitants and the AVB or the MCPFEF regional office.

- Improvement of collaboration structure

Through the pilot projects, it was examined the establishment of collaboration between MCPFEF, MAE and MS in the various fields. The examined structure was that MCPFEF takes initiative to coordinate the whole activities with narrow collaboration with MAE and MS.

With regard to the MCPFEF, the capacity of coordination, capacity of support for

female organizations, and IEC was examined. On the other hand, MAE led activities mainly in the field of productive skills on vegetable farming, chicken-keeping, and the life techniques. For MS, they provided the program on community health promotion through training/formation for AA/ASC and collaborated with the MCPFEF in the activities of female promotion.

It was confirmed, through these activities, that the structure of expansion and extension is established and starts to function. The remaining problems are; i) the need for specifying the details of activities and structure, and ii) insufficient MCPFEF's capacity on planning/execution/collaboration remain to be solved.

As for the first point, it is necessary to have enter-ministerial collaboration to solve the problems. For the second point, the reinforcement of capacity of MCPFEF during the first phase of the Action Plan, and technical support by the outside experts will be necessary to solve these problems.

6.3.5 5 Evaluation Items

(1) Sustainability and capacity for self-development

Two months after the start of the pilot projects, the number of Tirabane households that have begun poultry farming under their own initiative reached 10 (March 2006). The total number at the end of the study reached about 40 (December 2007). This significant increase is the result of the integration of white meat and eggs in the life of the inhabitants.

By submitting an application to the PDRC with support from AGPO, women's groups of M'Haireth have benefited from a fund of about 1 million ouguiyas (about \$ 4000) for their dyeing and sewing activities in 2007 which is the final year of this study. On the other hand, women's groups of Tirabane that were leading activities with their own funds by asking the trainer or study team members the purchase of necessary equipment such as dyes, have begun to use the network of families or friends living in the capital for the supply of these materials from the second half of 2007. These groups sell their products to tourists who visit their oasis during the tourist season or to other oases under the support of their oases women.

As for the gardening activity in N'Titam, the group involved in the pilot projects and other local groups have begun cultivation by asking directly on telephone the AVB requesting guidance for the winter campaign of 2007. And the group of N'Batt request advice from the AVB based in the headquarters of the wilaya through the radio installed in the health post.

The sensitization and extension activities have been initially conducted with the

objective of providing information that is useful for the improvement of the living conditions. However, it was not easy to bring participants together as people did not understand the importance of these activities and because it is difficult to inform the the organization of a meeting to the inhabitants scattered in the fairly large area. But with the increasing recognition of AA / ASC thanks to their assistance in childbirth or medical care and their support to women activities, the residents have begun to voluntarily participate in the training of the IEC since a trust relationship with the AA / ASC is established. Therefore, the inhabitants began to practice the health actions presented at those meetings (eg sterilization of water through chlorination; washing their body more frequent etc.). By observing the changes occurred among the residents from just about the 7th month, the AA / ASC were also motivated.

The training of personnel and enabling activities are considered effective for the sustainability of development activities of the inhabitants who have limited resources.

(2) Relevance

As women and their organizations did not receive a lot of support from the development activities, these activities in accordance with the national objectives set by the PRSP or SNPF can be regarded important. In fact, the spontaneous activities of the residents such as the purchase of necessary equipment, the search for funding, the development of activities until the commercialisation, the integration of agricultural products in the food habits or the contribution of women activities to the domestic economy have been noticed. One can say that the activities to support women carried out within the framework of this study correspond to the needs of women and are relevant to the residents. The actions undertaken such as the collaboration with AGPO, the training of the inhabitants leaders, the development of extension activities by the trained leaders and the administrative support based on the central oases are relevant compared to basic measures of oases development mainly carried out by the inhabitants.

(3) Effectiveness

Support activities for women are those activities in agriculture, health and income-generation closely related to life. The products are utilized efficiently by the domestic consumption and the commercialisation of the surplus. Medical services benefit all people in the oases. The expenditure for the supply of food, the transportation costs, the medical expenses or the expenses for the purchase of clothing being savable, one can use the money more effectively for other activities like children

education, buying of additional food items in order to improve living conditions and food security for household.

(4) Impact

The impacts are; women who contribute to a change in the food habits improved nutrition or home economics, and the training of AA/ASC capable of carrying out sustainable activities while helping the women activities. Thus, the activities are developed as those of the improvement of the living conditions in households, in groups or in social life in addition to benefitting women and their organizations.

There are AA formed by the other projects or programs in the country but they are not being used effectively. The fact of training AA as leaders of the inhabitants by providing them with additional training (ASC, sensitization method) is a positive impact as the AA can carry out the activities more actively, and they can be used effectively. In assessing the versatility of the role of AA combining the function of ASC, the policy of the MOH that only aimed at training and supporting the auxiliary midwives begins to explore in similar ways to better exploit the trained AA.

In assessing the Action Plan or the content of the handbooks/manuals developed in the framework of the present study, the MCPFEF decided to print these handbooks/manuals so that it widely distribute to the Regional Coordinations or the persons involved in the extension (especially in support for women) with the department's budget (300-500 copies). The MCPFEF has also intend to expand the movement for the improvement of the living conditions focusing on women, that is proposed by this study, in Provinces other than those targeted by the project.

6.3.6 Outcome of the Consideration of Oases Classification

In oases selection for pilot projects, oases with different characteristics have been selected in regard with access condition, AGPO situation and irrigation methods. The diversity of oasis was highlighted by the pilot projects. Although the experience of pilot projects were not sufficient as a samples for classification, the purposes can be illustrated as following.

<Access>

Tracks were better built in Adrar rather than Tagant. Considering activities, those in Tagant are limited within each oasis while those in Adrar is outreaching outside oases. However, this difference can be explained simply by the situation of access to the capital from the Wilayas. Compare the activities in two oasis, activities in

Tirabane in Adrar were more animated, even though it is not a place of high production dates, and have not been visited by tourists. The team believed that all this was caused by the aspiration to rising incomes and new activities.

<Status of AGPO activities>

The AGPO have played an important role in coordinating in this case the constraints in terms of women's activities throughout the pilot projects. In short, it has been observed that the support of AGPO is essential compared to other cases where it could not solve the problems between women's organizations.

<Motor Irrigation and Manual Irrigation>

Adrar region is blessed with motor irrigation whereas manual irrigation is main in Tagant. However, in the area of motor irrigation, the risk of water stress on plants is higher as irrigation is carried out from the view point of the economic of rational use of motor. Wells in motor irrigated zone is deeper than that in manual irrigation zone, and the risk of crop failure caused by the malfunctioning of motor pump is also higher.

6.4 Feedback to the Action Plan

6.4.1 Outline

Throughout the pilot projects, it is found that there are several lessons related to planning and implementation for supporting women in oases. Based on this, it is possible to notice that these lessons can be reflected to finalization of the Action Plan. As discussed in 6.3, many of lessons are positive; therefore the management of pilot projects can be reasonable. However, in the next chapter this report suggests on some political and institutional issues, which are beyond the scope of this report. In this section, it will attempt to correct the Action Plan based on the lessons learned and reflect highlighted points to the Action Plan.

6.4.2 Correction Based on the Lessons Learned

(1) Reviewing the programs

As seen in 6.2.2, depending on the outcome of the mid-term evaluation, it is important to rearrange the pilot projects by a holistic point of view on supporting women, and add the following points which are necessary for highlighting the roles of MCPFEF and implementing organizations:

- i) Realize the improvement of the living techniques (dyeing, kitchen, awareness about nutrition etc.), in an integrated manner along with agricultural techniques.
- ii) Train the AA/ASC as leaders capable to take in charge the women support.

iii) Implement the seminar for improvement of the living conditions (production techniques, technique of living or training of inhabitants) under the initiative of the MCPFEF.

The important women roles in the household or in the oasis society in the development of oases could be confirmed through the pilot projects reviewed. Therefore, the above issues will be reflected in the Actions Plan.

(2) Rational Method of extension

In order to achieve effective extension activity at lower cost it is considered to gather beneficiaries of oases at a time and provide several activities as a package instead of assisting each oasis individually. For this to occur, the activities which take into account the following points should be conducted.

- i) Integrate the seminar for improvement of the living conditions as a method of extension.
- ii) Integrate the extension combining the demonstration, the workshop for presentation of the techniques, the distribution of handbooks/manuals or the exchange of information between the inhabitants.
- iii) Integrate the extension by women's local leaders, that within the groups and that between the inhabitants through the exchange between the groups.
- iv) Introduce the activities of vegetable gardening, poultry farming, dyeing or sewing for which the level of needs among women is high and the benefits are clear to households as income activities.
- v) Consider the understanding of men (husbands) from the beginning even if the activities are aimed at women.

(3) Development of the AA / ASC for women support activities

AA/ASC trained in the framework of the present study have become indispensable for the women leaders by carrying out various activities other than health. Particularly, AA/ASC are an important source of information of outside of the world for women.

The reasons why the AA/ASC were welcomed by the inhabitants are: a) they are selected among the residents; b) having received formal training they possess specialized and accurate knowledge; c) they can approach the people by focusing on the health problems; and d) they can carry out activities of sensitization in the framework of the improvement of the living conditions that can meet diverse needs of the inhabitants. Thus they possess capacities that the women leaders not used to have so far. The use of these AA/ASC as local leaders can be a model for women support in the future.

6.4.3 Points Clarified

Having been highlighted through the activities of the pilot projects, The following point will be reflected in the Action Plan.

(1) The target number of oases to be trained

The prominent importance of the roles of AGPO and AA/ASC for the implementation of the Action Plan was confirmed by the pilot projects. As a result, the oases to train in the implementation of the Action Plan are i) the 26 oases featuring both AGPO and AA, and ii) the 13 oases with only AA.

(2) Clarification of execution structure

i) Reflection to the execution structure of the Actions Plan

The forms of coordination related to women support and gender, and collaboration with government's technical departments as well as the problems to be solved were highlighted to some extent.

Central level: The MCPFEF as a coordinating body of all the activities, the MOH and the MFA as an organization providing support will establish a collaborative relationship in their specialized fields. The MCPFEF will implement a transverse and logistic support covering the support to women's organizations or the awareness. The MFA will mainly bring technical supports in the fields of production techniques and life while working with the MCPFEF. The MCPFEF and the MOH work in supporting the activities of local health and the promotion of women's activities for the training of AA/ASC.

Regional level: The regional level activities of the regional offices of the MCPFEF, the MOH and the MFA are coordinated under the initiative of the MCPFEF. The latter with the help of the MOH and the MFA regularly conduct the preparation and review of the business plan as well as the reflection of the activities on the ground.

ii) Smooth implementation of the Actions Plan by further strengthening the MCPFEF

Programs for women support covering many fields (agriculture, health, income generation, living and technical support to organizations) should be implemented by the MCPFEF which coordinates and cooperates with other government departments. The MCPFEF should be the core of coordination to promote the activities which are emphasized women support and gender. Since the weak capacity in the fields of

planning, implementation and coordination is still a problem of the MCPFEF, the activities of capacity development of this ministry should be carried out in parallel to those programs (during the first and second year) in order to ensure the proper unfolding of the activities.

Table 6.1.1 Comparison of the Pilot Projects in the Previous JICA Study and Current Study

Pilot tests of the former study	Results and problems of the pilot tests of the previous JICA study	Pilot projects of the present study
<p>1) Vegetable gardening by inhabitants farmers</p>	<ul style="list-style-type: none"> • The effect of the ridge and shading being recognized, some farmers continue. • Despite understanding the effect of compost by the people no one is continuing using it as unavailable materials (fish waste) were used. • Despite the recognition of the importance of the preparation of nurseries, there has been no transfer of technology. • There is no group of women who continued drip irrigation. • The cultivation in summer season is not continued. • You can not see the effect of propagation inside the supervised oases. • The demand for the continuation of assistance to their activities to the survey team of the present study by the groups of women targeted under the old study is virtually non-existent. - The manuals developed by the previous study were not disseminated or used. 	<p>1) Extension of vegetable gardening techniques</p> <ul style="list-style-type: none"> • The national policy placing importance on increasing consumption of vegetables from the viewpoint of improving nutrition, conduct extension activities mainly to women and women's groups in parallel with sensitization. • Using simple techniques with materials at low prices which are locally available. • Extend ridging and shading techniques in the other oases. • Using materials available for composting. • Transfer simple techniques of nurseries preparation. • Develop simple manuals (guides) for use by residents. • The technical guidance should be given in principle by the AVB.
<p>2) Growing of Water saving date Palms</p>	<p>The techniques proposed in the context of the test are not accepted by the people, this aspect is not proposed as a priority project.</p>	<p>The cultivation of palm trees being practiced by men, women are not many. Do not carry out the activities of this component given the difficulty of confirming their effects in a short period and considering that women are not concerned with this type of crop.</p>
<p>3) Increase in Pasture Production</p>	<ul style="list-style-type: none"> • The continuation of poultry has been found only in a group. • You can not see the spread of activities in the oasis where the activities are continued. • The materials used for the construction of the cages come from outside the oasis. • The measures against heat were insufficient. • The measures against predators were insufficient. • The manuals developed by the previous study were not disseminated or used. 	<p>2) Extension of poultry farming techniques</p> <ul style="list-style-type: none"> • The policy of improving nutrition placing importance on diversifying sources of protein, consumption of white meat or eggs is desired. • Using simple techniques with materials at low prices and available locally. • Take special measures against heat (stone cage or shade). • Take measures against predators (cage for chicks or cages nearby houses). • Develop simple manuals (guides) for use by residents. • Supply of poultry feed in the oases.
<p>4) Improvement of Health Conditions and Public Hygiene</p>	<ul style="list-style-type: none"> • You can not see any continuation of activities of the former JICA study. • The volume of activities in the oasis is extremely low; this aspect could not give impacts. • There are some differences between the needs of people and activities of the pilot tests. 	<p>3) Improving health and hygiene</p> <ul style="list-style-type: none"> • Focusing on the activities of local health and assistance to childbirth in accordance with the needs of residents. • Exploiting to the maximum local resources and the institutional system of the country (between DRPSS- PS of Moughataa-AA/ASC). • AA / ASC will be responsible for the gender aspect / support for women's activities.
		<p>4) Activities generating income / training support groups</p> <ul style="list-style-type: none"> • Addressing issues of activities generating revenue (AGR) and activities to support women's cooperatives that were not dealt with by the previous JICA study • These are activities expected by many women and women's organizations who did not receive a lot of opportunity to participate in development and training. • Concurrently with the training of groups and leaders, to provide support in the activities of dyeing or sewing to motivate women.

Table 6.1.2 Menu and Key Project Activities in the Action Plan

Programme	Proposed projets	Key activities
1. Support Programme for agriculture, livestock breeding and management of resources	1-1 Project for the Improvement of vegetable growing techniques	1) Improvement of techniques (ridging, soil dressing, shading etc.
		2) Expanding the growing season , summer cropping
		3) Introduction of new crops, sensitization on rational water use
	1-2 Project for the Improvement of poultry farming techniques	1) Improvement of techniques (fodder, feed, measures against heat)
		2) Construction of simple henhouse
	1-3 Project for the strengthening of the extension system of agricultural techniques and livestock breeding	1) Communication in the oasis and between oases.
		2)Use of the technical manual by residents
	1-4 Project for the efficient use of resources	1) Water saving irrigation, monitoring of groundwater by residents
2) Coordination between agriculture and livestock (compost, fodder crops which provide at the same time shade)		
2.Programme for the Improvement of health and hygiene	2-1 Project for the promotion of rural health activities	1) Training oasis health staff (ASO)
		2) Sensitization of the people on health and hygiene
		3) Development of the support system for ASO
	2-2 Project for the training of Auxiliary midwives	1) Training of auxiliary midwives(AA)
		2) Assistance in childbirth
		3) Development of the support system for AA
2-3 Project for the improvement of nutrition	1) Monitoring the nutritional status of children.	
	2) Sensitization of residents on improving nutrition	
3.Support programme toi income generating activities.	3-1 Project of technical training	1) Learning techniques
		2) Activities of petty trade
	3-2 Project for strengthening the management of organizations	1) Training in the management capacity relative to economic activity
		2) Realization of planning / implementation / project management by the people
4.Strengthening of inhabitants capacities	4-1 Project for strengthening women groups and women cooperatives	1) Training on organizational activities, exchange between organizations
		2) Leaders training, establishment of women's cooperatives 'unions
	4-2 Project for the training on the activities of the new project	1) Learning new techniques
		2) Diversification of organizational activities
	4-3 Project for the sensitization on sustainable activities	1) Acquisition of understanding on the project activities
		2) Training the inhabitants on the consciousness of the owner's responsibility.
5.Strengthening the administrative system	5-1 Project for strengthening the capacities of the SECF	1) Improving the coordination capacity of the SECF
		2) Support activities for women in the framework of oases development
	5-2 Project for strengthening the extension system through the training of staff and coordination of diverse stakeholders	1) Training and strengthening of staff dealing with extension
		2) Administrative support for trained people.

Table 6.1.3 Relationship between the Draft Action Plan and the Verification Points of the Pilot Projects

Draft Action Plan		Points of the pilot tests
I. Support for Oases women		I. Support for Oases women
1. Agriculture, livestock breeding and management of resources		1. Agriculture, livestock breeding and management of resources
1-1 Improvement of vegetable growing techniques	→	①Vegetable gardening
1-2 Improvement of poultry farming techniques	→	②Poultry farming
1-3 strengthening of the extension system of agricultural techniques and livestock breeding		Validated in land II above
1-4 Efficient use of resources		Validated in land II ci-dessusabove
2. Improvement of health and hygiene		2. Improvement of health and hygiene
2-1 Promotion of rural health activities	→	③Promotion of rural health activities
2-2 Training of Auxiliary midwives	→	④Training of Auxiliary midwives
2-3 Improvement of nutrition		Validated in II above
3. Income generating activities		3. Income generating activities
3-1 AGR and support to women's organizations	→	⑤ AGR and support to women's organizations
3-2 Strengthening the management of organizations		Validated in II above
4. Strengthening of inhabitants capacities		4. Strengthening of inhabitants capacities
4-1 Strengthening women groups and women cooperatives		Validated in programmes 1-3 above
4-2 Training on the activities of the new project		Validated in programmes 1-3 above.
4-3 Sensitization on sustainable activities		Validated in programmes 1-3 above.
II Strengthening the administrative system		II Strengthening the administrative system
5-1 Strengthening the capacities of the SECF	→	⑥Strengthening the capacities of the SECF
5-2 Strengthening the extension system		Validated in programmes 1-3 above.

Table 6.1.8 Selection of Concerned Oases

Moughataa	Oasis	1) Situation of the AGPO activities 2004 2005	2) Situation of the women's cooperative activities	3) Agriculu ral producti on potential	4) Potenti al as a centre of the area	5) Acce ss	6) PDDO oasis of refere nce	Final Evalu ation
Adrar								
Aoujeft	Toungad	○ ○	○	⊙	⊙	○	▲	
	El Maaden	○ ○	⊙	○	○	○		○
	Tirabane	⊙ ⊙	○	○	○	○		○
	N'Terguent-Marveg			○	○	▲		
	Timinitt	○		○	▲	▲		
	Loudey	⊙ ⊙	⊙	○	○	○		○
	Meddah			○	○	▲		
	M'Hairett	○ ○	○	○	○	○		○
	Azouigue	○ ○	▲	○	○	○		
	Gleit			○	○	▲		
Atar	Wekcheda			○	○	▲		
	Teyzent							
	Terwene-Zire			▲	○	○		
	Tawaz	⊙ ⊙	▲	⊙	⊙	⊙	▲	
	J'Reif			○	▲	○		
	Ksair Torchane			○	○	○		
	Teyarett	○ ○	○	○	○	○		○
Ouadane	Ain Ehl Taya	▲ ▲		○	⊙	⊙		
	Tenlaba			○	○	○		
Chinguetti	Ouadane			○	○	○	▲	
	Chinguitty	○ ○	⊙	○	○	○		○
	Tenwemend			○	○	▲		
Tagant								
Tidjikja	Rachid			○	○	○		
	El Adala	○ ○	⊙	⊙	⊙	⊙	▲	
	El Baraka			○	▲	▲		
	El ghoudia			○	▲	▲		
	Aghlembit	○ ○	○	○	○	○	▲	
	El Kheir							
	El Wiam	○ ○	○					
	Nimlane	○ ○	⊙	○	⊙	⊙		○
	Lehweitat	○ ○	○	○	○	○		○
	N'Bat	○ ○	⊙	○	○	○		○
	Ederoum	○ ○	○	○	○	○		○
	Echarim							
	Aouienat Rji			○	▲	○		
	Zouera	▲		○	▲	▲		
Moudjeria	Achram Tagant			○	○	○		
	Lekhdeima			○	▲	▲	▲	
	El housseiniya			▲	○	○		
Tichitt	N'Titam	⊙ ⊙	⊙	⊙	○	○		○
	Tichit			○	○	▲		

Note) The evaluation was conducted according to 3 levels (⊙good, ○fair, ▲ bad). With regard to the case (6), the PDDO oasis of reference, those corresponding to the PDDO selection are rated by ▲.

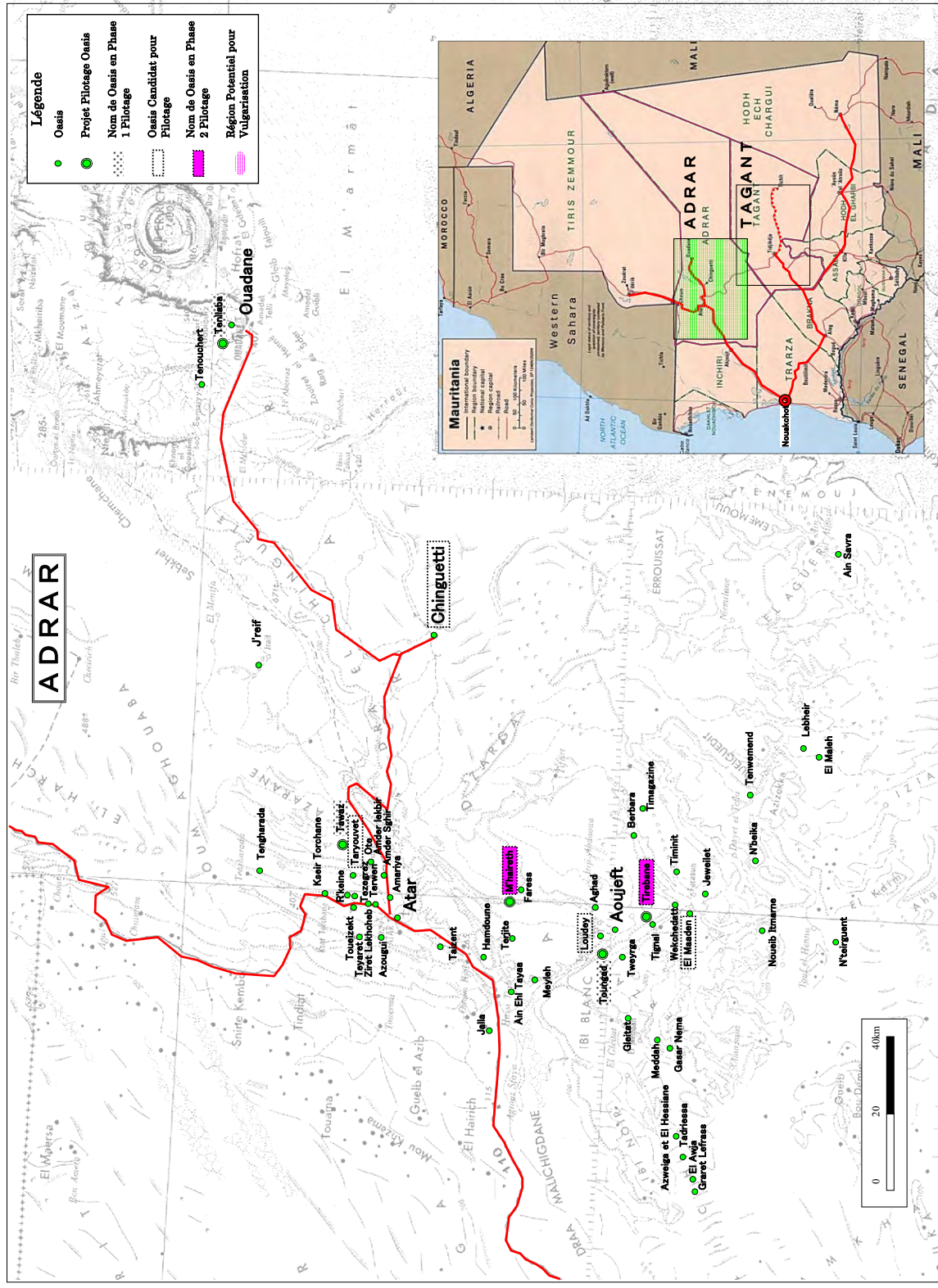


Figure 6.1.1 Map of Target Oases (Adrar) (1/2)

Table6.2.3.(1).1 Conditions of Operational Farm and Cultivation Activities of Women Groups in the Pilot Projects

Oasis (area)	Facilities	Environment	Farm Operation / Pilot Project Management
N'Batt (1,100 m ²)	Farm: Free leased Protection: Wire netting fence (installed with JICA support) Windbreak in farm: None Well: 1 Group name: El Amel Member: 18 Participants for vegetable cultivation: 10 Experience: 1 years	- Adjacent to other farms - Shading dates palms are scattered in and around the farm. - Windbreak mats are installed on wire netting fence surrounded. - Soil in the farm is loamy sands.	- Managed with initiatives of the president - Assisted actively by vice president of AGPO - Individual cultivation in appointed plots. - Cultivation in the Pilot Project is conducted and managed by all members.
N'Titam (1,300m ²)	Farm: Own farm Protection: Wire netting fence with hedges Windbreak in farm: Dates fronds mat by individuals Well: 1 + 2(temporally) Group name: El Adala Member: 62 Participants for vegetable cultivation: 60 Experience: 5 years	- Isolated farm from other farms. - No shading trees. Individual members install windbreak mats. - Soil in the farm is loamy sands.	- Managed by the president and young members. - Individual cultivation in appointed plots. - Cultivation in PP is managed by the president and young members. The cultivation is operated by rotation of members.
Tirabane (3,500 m ²)	Farm: Own farm Protection: Wire netting fence with dates fronds mats Windbreak in farm: Dates fronds mat by plots Well: 1 with leased pump Group name: NASR Member: 15 Participants for vegetable cultivation: 15 Experience: 4 years	- Adjacent to other farms. - One shading tree near well. There are some short dates palms but no shading affects. -Soil in the farm is sands.	- Managed with initiative of the president. - Assisted actively by the president of AGPO - Cultivations are conducted with group working. - Cultivation in PP is managed by all members. The cultivation is operated by rotation of members.

Source: JICA Study Team

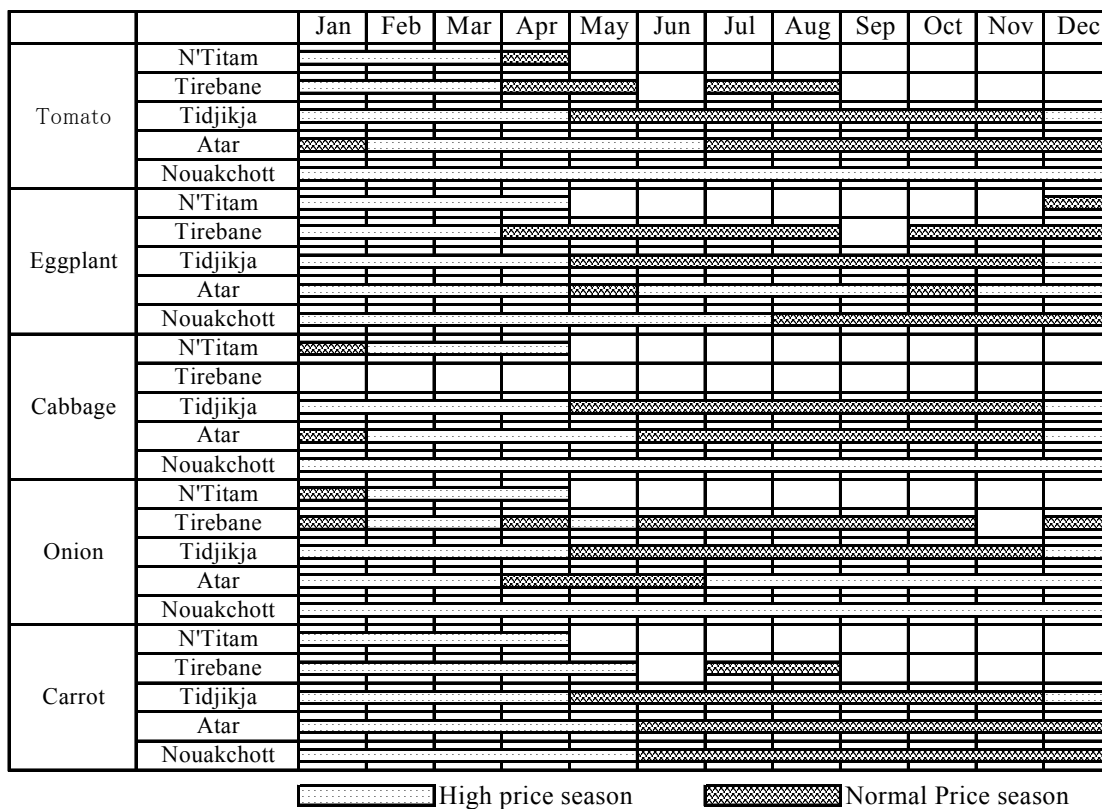


Figure 6.2.3.(1).1 Price Fluctuation of Vegetables in Respective Areas in Mauritania

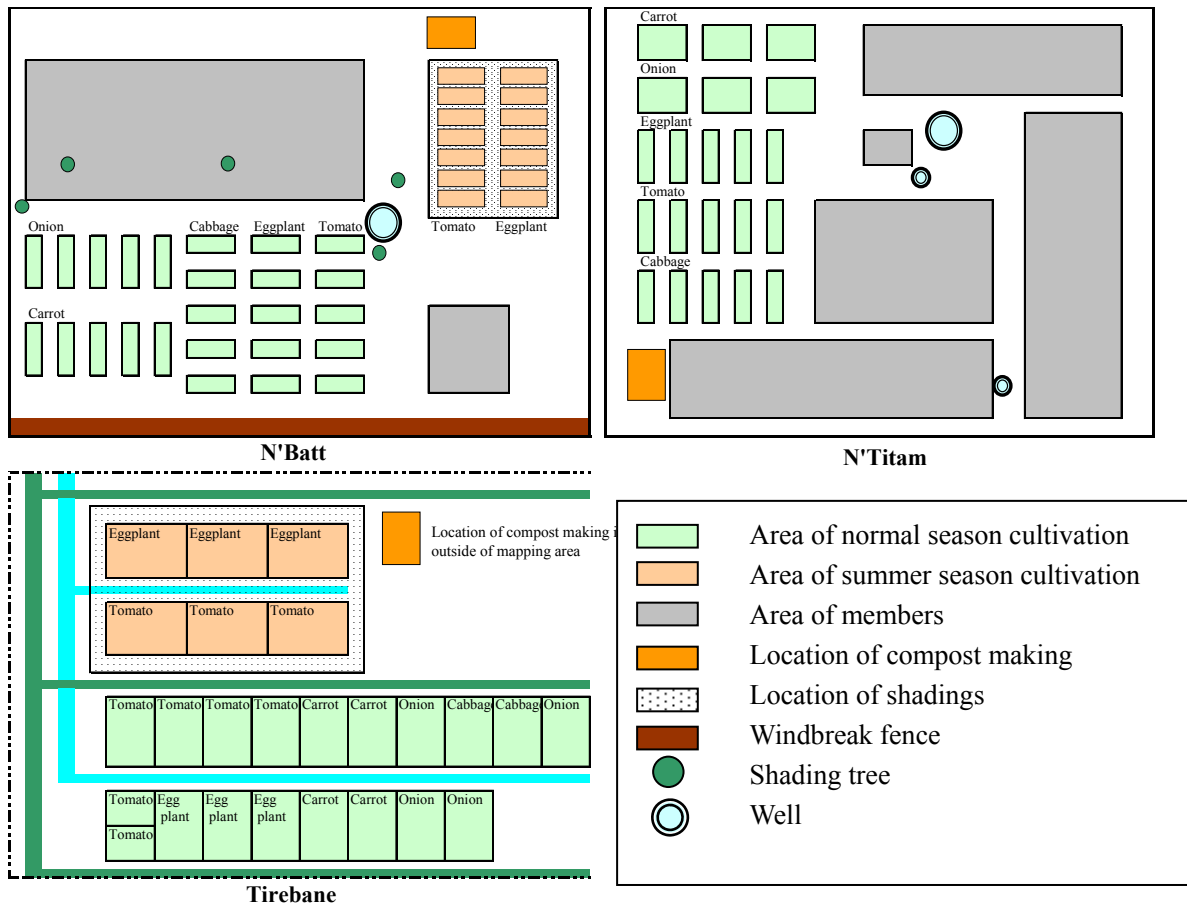
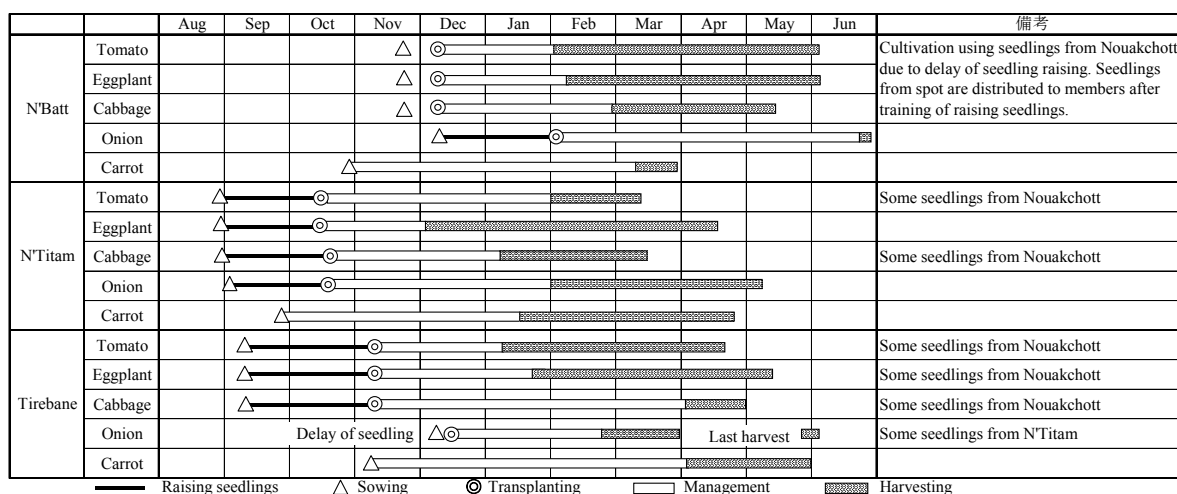


Fig6.2.3.(1).2 Experimental Settings of the Pilot Project for Vegetable Cultivation

Figure 6.2.3.(1).3 Cropping Calendar of Normal Season Cultivation in 2006



Note: Raising seedlings were conducted several times in each spot due to failure and damages of animals.
 Above schedule shows the typical figures.
 Raising seedlings were conducted at the office in Nouakchott for supplementary.

Table6.2.3.(1).17 Growing Conditions in Normal Season Cultivation in 2006

	Vegetable	Plowing Method	Irrigation Method	Condition in cultivation period
N'Batt	Tomato	Ridge	By watering can	Delay of transplantation due to the late seedling production. There are no serious problems on cultivation.
	Eggplant	Ridge		Delay of transplantation due to the late seedling production. There are no serious problems on cultivation.
	Cabbage	Ridge		Delay of transplantation due to the late seedling production. There are no serious problems on cultivation.
	Onion	Basin		Delay of seeding. There are no serious problems on cultivation.
	Carrot	Basin		Bad growth.
N'Titam	Tomato	Ridge	By watering can	Short harvesting period.
	Eggplant	Ridge		No serious problems.
	Cabbage	Ridge		Bad growth in seedlings late transplanted
	Onion	Basin		No serious problems.
	Carrot	Basin		No serious problems.
Tirabene	Tomato	Basin	Pump	No serious problems.
	Eggplant	Basin		No serious problems.
	Cabbage	Basin		Damage by insects.
	Onion	Basin		Bad growth due to improper irrigation.
	Carrot	Basin		Bad growth due to improper irrigation.

Table 6.2.3.(1).21 Yield and Irrigation volume of Main Vegetables

Tomate

	Season	Irrigation	Method	Yield Kg/10m ²	Irrigation volume mm/day			Interval(day)			Number of Irrigation days			TIV m ³ /10m ²	
					Initial	middle	Final	Initial	middle	Final	Initial	middle	Final		
Tirabene	Before	Basin	Traditional	8.6	16.7	10.0	16.7	3	5	3	115.0	30.0	20.0	165.0	40.8
	Pilot1	Basin	Improved	42.8	16.7	10.0	16.7	3	5	3	115.0	30.0	20.0	165.0	40.8
	Pilot2	Pot 10mm/d	Improved	42.9	10.0	10.0	10.0	1	1	1	115.0	30.0	20.0	165.0	18.5
N'Bat	Winter 2006	Horse	Improved	21.2	20.0	13.3	22.2	1	2t/d	1	85.0	61.0	37.0	183.0	33.3
N'Titam	Winter 2006	Pot	Improved	19.7	20.0	33.3	40.0	2t/d	2t/d	2t/d	134.0	10.0	0.0	144.0	30.1

Eggplant

	Season	Irrigation	Method	Yield Kg/10m ²	Irrigation volume mm/day			Interval(day)			Number of Irrigation days			TIV m ³ /10m ²	
					Initial	middle	Final	Initial	middle	Final	Initial	middle	Final		
Tirabene	Winter 2006	Basin	Improved	24.1	16.7	10.0	16.7	3	5	3	115.0	30.0	20.0	165.0	46.1
N'Bat	Winter 2006	Horse	Improved	61	20.0	13.3	22.2	1	2t/d	1	115.0	30.0	20.0	165.0	33.3
N'Titam	Winter 2006	Pot	Improved	67.8	20.0	33.3	40.0	2t/d	2t/d	2t/d	115.0	30.0	20.0	165.0	40.9

Carrot

	Season	Irrigation	Method	Yield Kg/10m ²	Irrigation volume mm/day			Interval(day)			Number of Irrigation days			TIV m ³ /10m ²	
					Initial	middle	Final	Initial	middle	Final	Initial	middle	Final		
Tirabene	Before	Basin	Traditional	8.8	16.7	10.0	16.7	3	5	3	110.0	30.0	51.0	191.0	47.7
	Pilot	Basin	Improved	13.6	16.7	10.0	16.7	3	5	3	110.0	30.0	51.0	191.0	47.7
N'Bat	Winter 2006	Horse	Improved	8.9	0.0	13.3	22.2	3	2t/d	1	122.0	24.0	0.0	146.0	16.6
N'Titam	Winter 2006	Pot	Improved	21.2	0.0	0.0	0.0	2t/d	2t/d	2t/d	135.0	31.0	25.0	191.0	23.7

Table 6.2.3(1).22 Summary of Technical Poultry Farm

Field	Contents / Strong points
Improved cage	The cages surrounded by chainlink fencing to protect enemy or heat. The residents have used materials equivalents. The cages are installed in places of charges for the reason of the heat (in the shaft cage demonstration). The cages are surrounded by tissues or tree branches to prevent warm winds. The fence surrounding the cage is buried deeply in order to prevent predators from the area.
Chicks cage	The cages to protect the chicks enemies. Spawning being delayed in keeping with the chickens, it is necessary to separate them. By putting them in cages special, we can expect more lay.
Feeding methods	The waste meals are given as food. Although these foods are rich in salt, lack of calcium. So you add the bones broken and burned for it.
Stone cage	It is a technique invented by the Oasis. Initially, the cardboard boxes of fruit have been used for spawning. However, Oasis have found that the cartons are not sufficiently rigid and that it is hot inside. To address these problems, they built a place specially designed for laying on the inside of the cage and the idea worked.

Reference 1 : Result of the Price Survey of Agricultural Products (N'Batt Tagant)

Aliments	Vegetable	Price	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07
Carotte	Carrot	UM/kg												
Tomate	Tomato	UM/kg	300	300	300	300	300	200	200	200	250	250	300	300
Chou	Cabbage	UM/kg	300	300	300	300	300	250	250	200	250	250	300	300
Aubergine	Eggplant	UM/kg	400	400	400	400	400	300	300	300	350	350	400	400
Pomme de terre	Potato	UM/kg	250	250	250	250	250	200	200	200	200	200	200	200
Oignon	Onion	UM/kg	300	300	300	300	300	300	300	300	300	300	300	300
Radis	Radish	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Laitue	Lettuce	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Betterave	Turnip	UM/kg	400	400	400	400	400	300	300	300	300	400	400	400
Citrouille	Pumpkin	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Blé	Wheat	UM/kg	100	100	100	100	90	90	90	90	100	100	100	100
Mill	Millet	UM/kg	120	120	120	120	120	120	120	120	120	120	120	120
Carotte séchée	Dried carrot	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Tomate séchée	Dried tomato	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Oignon séché	Dried onion	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Viande(bœuf)	Cattle meat	UM/kg	900	900	900	900	900	900	900	900	900	900	900	900
Viande(mouton)	Sheep meat	UM/kg	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Viande(chèvre)	Goat meat	UM/kg	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Cœuf de poule	Egg	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Date(mure)	Dates matured)	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Date(a moitié)	Dates (half matured)	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Date(non mure)	Dates (non matured)	UM/kg	300	300	300	300	300	200	200	200	250	250	300	300

Reference 2 : Result of the Price Survey of Agricultural Products (N'Titam Tagant)

Aliments	Vegetable	Price	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07
Carotte	Carrot	UM/kg	-	-	-	-	-	-	300	300	300	300	-	-
Tomate	Tomato	UM/kg	-	-	-	-	-	-	200	200	200	300	-	-
Chou	Cabbage	UM/kg	-	-	-	-	-	-	300	250	250	250	-	-
Aubergine	Eggplant	UM/kg	-	-	-	-	-	400	200	100	100	100	-	-
Pomme de terre	Potato	UM/kg	-	-	-	-	-	-	400	300	300	400	-	-
Oignon	Onion	UM/kg	-	-	-	-	-	-	400	300	300	300	-	-
Radis	Radish	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Laitue	Lettuce	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Betterave	Turnip	UM/kg	-	-	-	-	-	-	300	300	300	300	-	-
Citrouille	Pumpkin	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Blé	Wheat	UM/kg	-	100	100	100	150	150	120	120	120	120	135	135
Mill	Millet	UM/kg	-	65	65	125	-	-	125	125	150	137.5	125	125
Carotte séchée	Dried carrot	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Tomate séchée	Dried tomato	UM/kg	-	-	1,300-	1,300	-	-	-	-	-	-	-	-
Oignon séché	Dried onion	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
V viande(bœuf)	Cattle meat	UM/kg	-	600	600	600	600	600	800	600	800	800	800	800
V viande(mouton)	Sheep meat	UM/kg	-	800	800	800	800	800	800	800	800	800	800	800
V viande(chèvre)	Goat meat	UM/kg	-	800	800	800	800	800	800	800	800	800	800	800
Cœuf de poule	Egg	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Date(mure)	Dates (matured)	UM/kg	-	250	250	300	300	-	-	-	-	-	-	250
Date(a moitié)	Dates (half matured)	UM/kg	-	125	-	-	-	-	-	-	-	-	-	300
Date(non mure)	Dates (non matured)	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
	Nieve	UM/kg	-	-	-	-	-	-	-	150	150	200	200	200
	Peanut	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-

Reference 3 : Result of the Price Survey of Agricultural Products (Moujeria Tagant)

Aliments	Vegetable	Price	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07
Carotte	Carrot	UM/kg	-	400	400	400	400	400	400	200	200	400	250	400
Tomate	Tomato	UM/kg	-	400	400	400	400	400	480	400	190	400	200	400
	Cabbage	UM/kg	-	400	400	400	400	400	400	400	400	400	400	400
	Eggplant	UM/kg	-	400	400	400	400	400	-	200	-	250	-	250
Pomme de terre	Potato	UM/kg	-	300	300	300	300	250	400	300	300	400	300	300
Oignon	Onion	UM/kg	-	300	300	300	300	250	400	300	300	300	300	300
Radis	Radish	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Laitue	Lettuce	UM/kg	-	-	-	-	-	-	-	-	400	-	-	-
Betterave	Turnip	UM/kg	-	-	-	-	-	-	-	300	-	250	-	-
	Nieve	UM/kg	-	-	-	-	-	175	137.5	125	125	200	125	200
	Peanut	UM/kg	-	-	-	-	-	300	300	400	400	400	400	250
	Pumpkin	UM/kg	-	400	400	400	400	400	400	400	400	250	150	400
Blé	Wheat	UM/kg	-	100	100	100	120	100	100	100	100	140	100	120
Mill	Millet	UM/kg	-	90	80	80	200	80	87.5	125	125	100	150	125
Carotte séchée	Dried carrot	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Tomate séchée	Dried tomato	UM/kg	-	2000	2000	2000	-	-	-	-	-	-	-	-
Oignon séché	Dried onion	UM/kg	-	350	350	350	-	-	-	350	-	-	-	-
Viande(bœuf)	Cattle meat	UM/kg	-	700	700	700	700	700	700	700	700	700	700	800
Viande(mouton)	Sheep meat	UM/kg	-	800	800	800	800	800	800	800	800	800	800	1000
Viande(chèvre)	Goat meat	UM/kg	-	800	800	800	800	800	800	800	800	800	800	1000
Œuf de poule	Egg	UM/kg	-	200	200	200	300	300	300	350	350	250	-	-
Date(mure)	Dates matured)	UM/kg	-	200	200	300	-	-	-	-	-	-	-	-
Date(a moitié)	Dates (half matured)	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Date(non mure)	Dates (non matured)	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-

Reference 4 : Result of the Price Survey of Agricultural Products (Tidjikja Tagant)

Aliments	Vegetable	Price	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07
Carotte	Carrot	UM/kg	350	350	350	350	350	300	300	300	300	300	350	350
Tomate	Tomato	UM/kg	450	350	350	350	350	250	200	200	250	350	400	400
	Cabbage	UM/kg	400	400	400	400	400	350	350	350	350	350	400	400
	Eggplant	UM/kg	300	300	300	300	300	250	250	250	250	250	300	300
	Potato	UM/kg	300	300	300	300	300	250	250	250	250	250	300	300
	Oignon	UM/kg	350	350	350	350	350	300	300	300	300	300	350	350
	Radish	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
	Lettuce	UM/kg	200	200	200	200	200	150	150	150	150	150	200	200
	Beet rave	UM/kg	400	400	400	400	400	350	350	350	350	350	400	400
	Navet	UM/kg	250	250	250	250	250	200	200	200	200	200	250	250
	Citrouille	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
	Blé	UM/kg	100	100	100	90	90	90	90	100	100	100	100	100
	Mil	UM/kg	120	120	120	100	100	100	100	110	110	120	120	120
	Carotte séchée	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
	Tomate séchée	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
	Oignon séché	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
	Viande(bœuf)	UM/kg	900	900	900	900	900	900	900	900	900	900	900	900
	Viande(mouton)	UM/kg	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	Viande(chèvre)	UM/kg	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	Œuf de poule	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
	Date(mure)	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
	Date(a moitié)	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
	Date(non mure)	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-

Reference 5 : Result of the Price Survey of Agricultural Products (Tirabane Adrar)

Aliments	Vegetable	Price	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07
Carotte	Carrot	UM/kg	100	100	-	-	-	-	80	70	70	50	50	-
Tomate	Tomato	UM/kg	200	200	-	-	-	-	180	150	150	200	200	-
Chou	Cabbage	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Aubergine	Eggplant	UM/kg	200	200	-	200	200	200	160	150	130	200	200	200
Pomme de terre	Potato	UM/kg	250	250	250-300	-	300	300	250	200	200	250	250	250
Oignon	Onion	UM/kg	250	250	250	250	200	250	250	200	200	250	220	250
Radis	Radish	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Laitue	Lettuce	UM/kg	50/pc	-	-	-	-	-	-	-	-	50/pc	-	-
Betterave	Turnip	UM/kg	200	200	-	-	-	-	-	-	-	-	-	-
Citrouille	Pumpkin	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Blé	Wheat	UM/kg	100	100	100	100	150	150	140	140	140	120	120	120
Mill	Millet	UM/kg	250	250	120	200	200	200	200	200	-	250	250	250
Carotte séchée	Dried carrot	UM/kg	1200	1200	-	1000	1200	1200	1000	800	800	400	450	450
Tomate séchée	Dried tomato	UM/kg	1200	1200	-	1200	1200	1000	800	800	800	1200	1200	1200
Oignon séché	Dried onion	UM/kg	1000	1000	-	500	200	200	200	180	180	100	100	1000
V viande(bœuf)	Cattle meat	UM/kg	1000	1000	1100	1000	1000	1000	1000	1000	1000	1000	1000	1000
V viande(mouton)	Sheep meat	UM/kg	1100	1100	1300	1100	1100	1200	1200	1200	1200	1200	1200	1200
V viande(chèvre)	Goat meat	UM/kg	1100	1100	1300	1100	100	1200	1200	1200	1200	1200	1200	1200
Cœuf de poule	Egg	UM/kg	50	50	50	50	50	50	50	50	50	50	50	50
Date(mure)	Dates matured)	UM/kg	500-600	500-600	600	1000	500	500	500	500	500	500	500	500
Date(a moitié)	Dates (half matured)	UM/kg	700-800	700-800	600-700	-	-	700	700	700	700	-	-	-
Date(non mure)	Dates (non matured)	UM/kg	500	500	500	-	-	500	500	500	500	-	-	-

Reference 6 : Result of the Price Survey of Agricultural Products (Atar Adrar)

Aliments	Vegetable	Price	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07
Carotte	Carrot	UM/kg	350-400	350-400	350-400	400	400	350	200	80	70	80	90	150
Tomate	Tomato	UM/kg	250-300	250-300	300-350	400	300	300	300	250	200	200	200	250
Chou	Cabbage	UM/kg	300	300	300-350	600	400	500	500	300	120	200	250	250
Aubergine	Eggplant	UM/kg	200	200	200	300	200	200	200	150	200	200	300	200
Pomme de terre	Potato	UM/kg	200	200	200	200	200	200	200	180	200	250	260	250
Oignon	Onion	UM/kg	200	200	200	200	200	180	200	180	200	260	260	250
Radis	Radish	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Laitue	Lettuce	UM/kg	-	-	-	-	-	-	100	50	300	300	-	-
Betterave	Turnip	UM/kg	-	-	-	-	300	250	200	180	120	100	-	-
Citrouille	Pumpkin	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Blé	Wheat	UM/kg	100	100	80-100	100	100	100	100	100	100	110	110	110
Mil	Millet	UM/kg			120	160	170	170	170	170	170	170	180	180
Carotte séchée	Dried carrot	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Tomate séchée	Dried tomato	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Oignon séché	Dried onion	UM/kg	500	500	-	500	500	500	500	500	500	500	600	600
Viande(bœuf)	Cattle meat	UM/kg	900-1200	900-1200	900-1200	1000	1000	1000	1200	1200	1200	1200	1200	1200
Viande(mouton)	Sheep meat	UM/kg	1200	1200	900-1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Viande(chèvre)	Goat meat	UM/kg	-	-	900-1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
Œuf de poule	Egg	UM/kg	40-50	40-50	40	45	40	40	40	50	50	50	50	50
Date(mure)	Dates matured)	UM/kg	500-1000	500-1000	500-700	700	700	700	700	700	700	700	700	1000
Date(a moitié)	Dates (half matured)	UM/kg	450-550	450-550	500-700	-	-	-	-	-	-	-	-	1000
Date(non mure)	Dates (non matured)	UM/kg	500-700	500-700	500-700	-	-	-	-	-	-	-	-	800

Reference 7 : Result of the Price Survey of Agricultural Products (Nouakchott)

Aliments	Vegetable	Price	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07
Carotte	Carrot	UM/kg	200	200	200	200	200	200	120-200	120-200	120-200	150-200	150-200	200
Tomate	Tomato	UM/kg	100	200	200	200	200	200	200	200	200	200	200	200
Chou	Cabbage	UM/kg	180	200	200	200	200	200	200	200	200	200	200	200
Aubergine	Eggplant	UM/kg	100	150	150	150	150	150	100	100	100	100	100	100
Pomme de terre	Potato	UM/kg	200	200	200	200	200	200	200	200	200	200	200	200
Oignon	Onion	UM/kg	140-200	200	200	200	200	200	200	200	200	200	200	200
Radis	Radish	UM/kg	100	150	150	150	150	150	150	150	150	150	150	150
Laitue	Lettuce	UM/kg	100	100	100	100	100	100	80	80	100	100	100	100
Betterave	Turnip	UM/kg	200	200	200	200	200	200	200	200	200	200	200	200
Citrouille	Pumpkin	UM/kg	150	150	150	150	150	150	150	150	150	150	150	150
Blé	Wheat	UM/kg	150	150	150	150	150	150	150	150	150	150	150	150
Mill	Millet	UM/kg	100	100	100	100	100	100	100	100	100	100	100	100
Carotte séchée	Dried carrot	UM/kg	700	700	700	700	700	700	700	700	700	700	700	700
Tomate séchée	Dried tomato	UM/kg	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Oignon séché	Dried onion	UM/kg	400	400	400	400	400	400	400	400	400	400	400	400
Viande(bœuf)	Cattle meat	UM/kg	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Viande(mouton)	Sheep meat	UM/kg	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Viande(chèvre)	Goat meat	UM/kg	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Œuf de poule	Egg	UM/kg	50	50	50	50	50	50	50	50	50	50	50	50
Date(mure)	Dates matured)	UM/kg	500	500	500	-	-	-	-	-	-	-	-	-
Date(a moitié)	Dates (half matured)	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-
Date(non mure)	Dates (non matured)	UM/kg	-	-	-	-	-	-	-	-	-	-	-	-

CHAPTER 7

Conclusions and Recommendations

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7.1 Conclusion

From the results of the study, the role of women in the oases households and in the development process of the oases areas, which are confined and landlocked, has been confirmed. It was highlighted that the development of the latent capacity of women is an essential element of sustainable development of the oasis society.

The contribution to the improvement of living conditions or household food security in the oases areas along with the consideration attached to the gender aspect and the strengthening of women capacities in the Action Plan to support women, which is proposed in the present study, could be confirmed with the points explained below. As a result, the Mauritanian government, especially the MCPFEF will develop and implement the Action Plan in the two targeted regions of Adrar and Tagant on its own budget or through external aid. This plan will also be applied to activities in support of women in other regions.

- (1) The activities to support women carried out through the pilot project have not only contributed to improving the diet and health situation as well as the generation of incomes, but also built the capacity to support women residents, ministry staff and extension officers involved in such activities. For example, family members of women's groups have increased the volume of self-consumption of vegetables or have begun to eat chicken meat they were not accustomed to consume. And the income earned through dyeing activities or sewing or selling vegetables are being used to fund activities to generate incomes, costs of raising children or food supply, contributing to the improvement of living conditions and ensuring household food security. Thus, having started to review their socio-economic activities, presently residents are trying to improve their lives by themselves.
- (2) Particular efforts to integrate the activities of this study in the life of the inhabitants were conducted with a view to achieving sustainable development by the residents themselves. The goal was to begin improving the daily lives within the community by the residents themselves through the introduction of simple techniques, training on the methods of processing and cooking, sensitization on nutrition and better health while enhancing equipment and materials available in the area. These activities have shown that the technical support measures corresponding to the needs of the people can be integrated into the lives of the people even when one does not provide material aid.
- (3) The people must participate in the extension of development in the area of the oases

where extension services have difficulty reaching. The auxiliary midwives (AA) / community health workers (ASC) selected from the population and trained under the pilot projects, have gained the trust of people after serious efforts of over 7 months. Understanding the importance of sterilization of water chlorination is evidence. The AA that are implemented in the villages by the MS were trained as a focal point of the oasis inhabitants with additional technical training related to the activities of local health or supporting women. It was confirmed by the results of pilot activities that AA / ASC are able to carry out activities of local health for the inhabitants and support activities for women in addition to assisting birth.

- (4) The Mauritanian government has founded 70 AGPO throughout the area of oases in the country and about 40 in the study area, and has set up more than 700 AA throughout the country (39 in the study area). These organizations of residents and the existing human resources can serve as a very useful basis for developing activities to support women in the oases. The Action Plan proposed by the present study is based on these AGPO, AA / ASC and women's organizations. The team were able to confirm that the system by which the regional staff and volunteers of MCPFEF and the AVB learn techniques from the central staff and spread it to develop activities with AGPO, AA / ASC and women's organizations, works with the extension system of the Mauritanian government and its budgetary constraints.

7.2 Recommendations

- (1) The Action Plan proposed here, which is consistent with PRSP and SNPF, integrates in a form of programme with the following activities; i) enhancing the productivity of women, ii) promoting women's participation in the decision-making process, and iii) undertaking sensitization and extension. Even if it is developed through the validation of activities in the model oases of Adrar and Tagant, this Action Plan is applicable to other Provinces. It is therefore proposed to consider that it is applicable to the entire oasis area in the context of the policy of MCPFEF.
- (2) To anchor the activities of improving living conditions proposed in the Action Plan in their daily lives, people should administer and develop activities through their own thinking. To do so, the administration in charge of extension shall be responsible for technical assistance in addition to securing the investment in equipment. It is necessary to encourage people to understand that they can improve the living environment around them through daily small improvements in addition to the transfer of technology and knowledge.
- (3) Contributing to the improvement of the living conditions, the improvement of nutrition, the vitalization of the latent capacity of women or the poverty reduction,

the Action Plan should be implemented quickly. There is a need to seek technical assistance from outside sources for activities that require technology transfer in the training of personnel engaged in supporting women.

- (4) As regards to the health sector, it is proposed to MS in give additional ASC training to the already trained auxiliary midwives or those to be trained in the future with the assistance of MCPFEF in order to develop effectively the people living in the oasis area.
- (5) The MAE will have to cooperate with MCPFEF with regard to the agriculture field. And as the present Action Plan has a complementary relationship with the development projects such as PDDO or PDRC, it is proposed to seek their attention so that the projects include the activities of the Action Plan in order to raise the synergistic effects of the activities.
- (6) It is proposed that MCPFEF and MS integrate activities of the Action Plan in the programs of activities in PASN (World Bank), which was started in 2007 with similar activities.