THE EURO-MEDITERRANEAN PARTNERSHIP: A PARTICIPATORY DEMONSTRATION PROJECT TO FIGHT DESERTIFICATION IN MOROCCO AND TUNISIA

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Abstract

A participatory demonstration project on desertification mitigation and rural development has been launched in Northern Africa under SMAP Programme (Short and Medium-term priority environmental Action Programme) financed by the European Union. The project, whose title is "Demonstration Project on Strategies to Combat Desertification in Arid Lands with Direct Involvement of Local Agro-pastoral Communities in North Africa", is carried out in sensitive regions in Morocco and Tunisia with the coordination of the NRD of the University of Sassari (Italy) and the partnership of the Agriculture Ministries of Morocco and Tunisia.

The project involves restoration of vegetation cover with drought resistant perennial forage species (Opuntia, Atriplex, Acacia, etc.) in highly degraded rangelands, to mitigate desertification processes and to improve rangelands productivity. The areas are located in regions characterised by rural poverty, food dependency and land abandoning; here urgent measures are needed to promote optimisation of resource management in view of a sustainable development.

This is a concrete demonstration project supported by the direct involvement of local communities. Successful actions already carried out in this field by the participants of the project as well as by other Mediterranean Countries, has been taken into account, re-elaborated and exploited thus promoting South / South co-operation and exchange of knowledge. Participation of all actors and especially of local communities is the key point in all the phases of the project and is strengthened by means of dissemination and sensitisation campaigns and by training courses. Only if, at the end of the project, all actors will own/share all choices made and the technology used, will interventions be "sustainable".

Introduction

The present contribution is devoted to the presentation of the approach and of the results achieved so far by a SMAP cooperation project coordinated by the NRD of the University of Sassari, with particular reference to the Moroccan component of the project.

The project, whose title is "Demonstration Project on Strategies to Combat Desertification in Arid Lands with Direct Involvement of Local Agro-pastoral Communities in North Africa", is carried out in sensitive regions in Morocco and Tunisia with the coordination of the NRD of the University of Sassari (Italy) and the partnership of the Agriculture Ministries of Morocco and Tunisia. SMAP is part of the MEDA programme, set up by the European Union as a framework for the Euro-Mediterranean Cooperation. The project described here is the only SMAP project currently dealing with direct interventions on

the field to combat desertification. For this reason it will represent an important pilot experience. It started on 2003 and will end on 2007.

The target areas identified by the project in Morocco (Marrakech area) and Tunisia (Kasserine area) show some of the main land degradation and desertification issues typical of the Mediterranean areas. They represent significant examples of the dramatic extent of land degradation reached by the Mediterranean rangelands in the last years. This issue is also highlighted in the respective National Action Plan (NAP) to combat desertification in these two Countries. Here particular emphasis is laid on the recovery of production in wide degraded areas both for the evident economic implications and because the traditional productive systems have a relevant social and cultural value.

Arid and semi-arid lands possess a fragile natural resource base and offer limited alternatives for sustainable increases in agricultural productivity under purely rainfed conditions (ICARDA, 1995). Agricultural activity in such areas is frequently dominated by range dependent small ruminant production systems (FAO, 1995). However, during the past two or three decades, increases in livestock populations and sedentarization of the population have raised fears of irreversible environmental degradation and increased poverty for the inhabitants of such areas (IFAD, 1996).

As a result of political, economic and environmental factors, the dryland agropastoral systems of the Northern Africa have experienced significant change in the past fifty years. National government attempts to sedentarize nomadic populations have in some cases lead to a breakdown of traditional controls on the use of grazing lands.

These factors in combination have resulted in a major degradation of rangelands and a higher level of dependency by producers on linkages between these extensive production systems and often unstable imported or domestic feed sources from other higher rainfall or irrigated agricultural areas. There is an urgent need to move these production systems to a more sustainable basis, but caution in the design and implementation of development projects in this type of area is required in order not to exacerbate the situation.

In the project areas in both Countries, the main economic activity is livestock breeding. The regions are characterised by rural poverty, food dependency and land abandoning, where urgent measures are needed to promote optimisation of resource management in view of a sustainable development. The land can grant only a very irregular forage production; therefore women often carry out agricultural activities because men are frequently obliged to migrate to look for a job in the urban centres.

In these contexts, the restoration of vegetation cover with drought resistant perennial forage species (*Atriplex spp., Acacia spp., Opuntia spp.*, etc., Fig 1 and 2) has proven to be a very good solution to mitigate desertification processes and to improve rangelands productivity. The present project will mainly make use of *Atriplex nummularia* in Morocco and of a mix of the three mentioned genders in Tunisia.

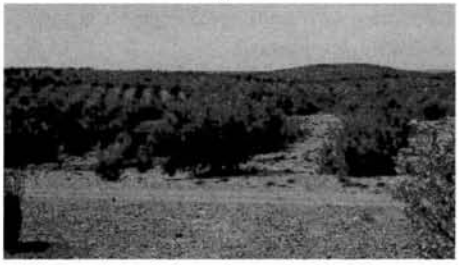

Figure 1. Atriplex plantation in Morocco

With particular reference to forage shrubs and Atriplex in particular, relevant researches have been carried out with the aim of verifying the concrete possibilities of desertification mitigation in very degraded rangelands, in areas with Mediterranean type of climate all around the world. The planting of forage shrubs has been demonstrated as an efficient way to mitigate the effects of drought in animal production systems of various arid and semi-arid regions.

It has been experimented since the first half of the last century in various subtropical and Mediterranean climate countries, but it is only in the 1960's that the concept became widely accepted (Le Houérou, 1990a, b, Correal 1988, Lailhacar 1962, Lailhacar et al. 1989, Lailhacar and Padilla 1987, Seligman 1983). Studies on the economic feasibility were carried out in the 1970's and the 1980's (Monjauze and Le Houérou 1965, Franclet and Le Houérou 1971, Le Houérou and El Barghati 1982, Le Houérou 1989).

These studies also highlight the multiple scope of fodder shrub planting:

- standing green fodder reserve for the dry season;
- inter-annual buffer feed reserve of standing fodder for severe and prolonged droughts;
- environmental protection;
- fodder shrub fences;
- wildlife shelter;
- land rehabilitation and desertification control;
- fuel wood production.

Figure 2. Cactus plantation in Tunisia

The objectives of the project

The overall objective of the Project is to contribute, through a participatory approach, to the development and dissemination across the Mediterranean of mitigation actions and techniques for the improvement of marginal agro-pastoral systems and for contributing to the fight against desertification through restoration of degraded rangelands.

The specific objectives of the project are:

1. Realisation of mitigation actions in Mediterranean arid rangelands affected by desertification and their rehabilitation to productivity by a participatory approach at the rural community level;
2. Development and dissemination of knowledge and innovation techniques in the field of combating desertification.

The above specific objectives will be achieved through a series of activities that will generate the following expected results:

1. Setting up of *rehabilitation methods and techniques* to recover and to increase the productivity of degraded rangelands by using perennial drought-resistant species having high pastoral value or fruit species, also through the creation of *local GIS-remote sensing stations* to study the possible output deriving from the involvement of wider areas;

2. Realization of *direct desertification mitigation actions* in the target areas, with particular reference to wind and water erosion, and increase of rangeland productivity. Increase of *rangelands productivity* through both forage shrub species and fruit species;

3. *Development of technical capacities* of local land planners on topics directly related to plantations realization and management, through specific training on desertification phenomena, rehabilitation actions and land evaluation techniques;

4. *Development of skinless and capacities of local participants* through the organization of *training and specialisation courses* related to the different field activities of the project;

5. *Information circulation and dissemination* about project activities and results through the realization of demonstration, sensitisation and information circulation activities at different levels, including international networking to improve the *South-South exchange of the acquired knowledge* and of *North-South know-how exchange* and also through the production of specific *illustrated didactic and dissemination material* to achieve a wide and effective dissemination at all the sensible levels of society, with particular reference to schools and women.

These objectives are particularly relevant to the UNCCD priorities. It is worth highlighting that the above-mentioned specific objectives have been proposed by the beneficiary partners who are directly responsible of some of the main national priorities of the respective UNCCD National Action Plans. These objectives also fully respect the approach adopted by the European Union SMAP Programme, Field of Action n. 5, Combating Desertification.

The approach of the project

Apart from technical approaches, it is widely recognised that actions programs to combat degradation are now to originate at the local level and be based on genuine local participation (figure 3 and 4). Local communities have a greater stake than anyone else in managing and improving their agricultural production system while ensuring the long term ecological balance of their fragile lands (UNCCD, 1998).

It is recognised that effective management of agropastoral production systems takes place if the technology addresses the production problems of producers and changes occur in the context of production governmental policies including those related to resource control and use. Agriculture production activities must be viewed in the context of sustainable livelihood strategies of producers.

Linkages between various elements of production and livelihood strategies need to be understood. Effective change cannot be legislated. That requires co-operative action between all parties: government, agricultural researches, community-based groups, and inhabitants to be effective.

Capacity and mechanisms should be developed by which all stakeholders can get together and work together, in a situation in which communities themselves play a larger role in the diagnosis and evaluation, design and implementation of development alternatives.

This can be accomplished through 1) the use of local knowledge and management systems in understanding the nature and dynamics of the situation, 2) the involvement of the community in the identification of needs through participatory research techniques and 3) by involvement of the community as partners (*interactive participation*: Pretty, 1995) in the development and implementation of appropriate solutions.

Figure 3. Children in Tunisia

The approach adopted by the project tries to implement these principles. The target groups involved in the project activities are breeders and are actively involved in the operational phases of the intervention. They are organised in cooperatives in Morocco (on common lands) and local farmer associations in Tunisia (on private lands). They have two main common characteristics: they have already been involved in participatory projects for rural development and they have expressed the need for an intervention of the kind planned by this project.

The strategy implemented can be analysed on three levels:

1) Direct *restoration intervention* on the land by using both perennial shrub forage species (*Atriplex nummularia*) and other species (*Opuntia ficus indica*, ecc.). In Morocco mainly Atriplex n. (2,000 ha) is produced in a local nursery directly benefiting the local people.
2) *Training* activities and specific *studies* to strenghten local capacities and knowledge on restoration techniques;
3) Complementary demonstration, sensitisation and information dissemination activities at local and national levels, as well as promotion of the international debate on desertification mitigation measures suitable for northern African countries, also through direct involvement of AMU (Arab Maghreb Union, Observer and member of the Steering Committee).

The first level of the methodology to be adopted constitutes the main investment of the project, whereas on the second and third level the major qualitative efforts will concentrate as it mainly aims at:

a) Guaranteeing the project sustainability and demonstrative value (transfer potential);
b) Favouring the know-how development at all levels, with particular reference to the local communities by, inter alia, stimulating their entrepreneurial capacities.

In Morocco the area of intervention is located in the rural municipality of Ouled Dlim (Wilaya of Marrakech). The area is characterized by arid climate, with high inter-annual fluctuations. Soil substrate is made of slate schist on which shallow soils have developed, with frequent rock outcrops and high stoniness. From an environmental point of view, the hilly area is fragile and highly degraded. Vegetation cover is scarce or absent, due to overgrazing and frequent agricultural tillage for cereal growing (barley and the harvesting left over are the main animals' feeding source), and subjected to intense erosion by wind and rain, as witnessed by an evident denudation.

The socio-economic data show that land abandonment is one of the main features of the area, which results in a general increase in the average age of the inhabitants. Furthermore, the pressing food dependency is urging the government to adopt measures and interventions to support local populations. A breeder's co-operative (Co-operative Ennur) is the main beneficiary and actively participates in the operational phases of interventions.

The species proposed in Morocco is *Atriplex nummularia*. This species was already successfully experimented, particularly by using Atriplex. The results showed very relevant positive impacts. *Atriplex nummularia* (chenopodiaceae) is an Australian shrub species characterised by its notable drought-resistance and salt-tolerance. Its leaves being edible and palatable and many Countries have recently utilised it to mitigate the effects of desertification and to increase productivity of severely degraded rangelands. As an example, since the '70s Morocco has carried out interventions with this species over 30,000 ha of rangeland, thus acquiring a notable experience. In other Countries, like Chile (48,000 ha up to now, 90% of which with *Atriplex nummularia*) the number of this kind of interventions is rapidly growing. Other regions with Mediterranean type of climate that extensively experimented this approach are located, among others, in South Africa and Australia.

At local level positive impacts are expected on:

- Land degradation processes. The effect of the increasing vegetation cover will progressively enhance mitigation. Vegetation cover will become effective against water and wind erosion since third year;
- Forage production, income, and quality of life. Forage shrubs plantations will provide increasing forage productions. A first controlled direct grazing in artiplex plantations could be carried out at the end of the third year. After the fifth year, an interesting forage production is expected: prickly pears, fruit production is expected to be significant, also in terms of income, by the end of the project, due to the current good market prices and will increase in following years. The income obtained through the integrative crops is also expected to reduce grazing pressure over all surfaces owned by the beneficiaries;
- Degree of awareness, capacity, entrepreneurial attitude, partnership. Training activity will help people to exploit their resources in sustainable way, by reducing real grazing pressure on land. Local co-operatives will be able to manage nurseries to carry out plantations and to rationally manage them. Medium and long term effects will be induced by training of local experts on land planning and agro-pastoral systems management by didactic activity in schools and by innovative attempts to involve women in land management issues;
- Multiplier effect/transfer potential to other communities. A combination of elements will produce a positive impact on the surrounding areas and guarantee a high multiplier effect towards neighbouring communities:
  - the high visibility of the results, both as impact on visual landscape and as effect on quality life;
  - demonstrative and information activities will interest all the province;
  - private and co-operative initiatives are expected to develop at the end of the project to exploit the facilities realised to keep them into production, to create a market for products and possibly for "mitigation actions".

Figure 4. The members of Cooperative Ennur in Morocco

Results obtained so far and discussion

The first contractual year of the project was completed. Almost all activities planned in the considered period have been set up and developed in due time. Apart from the physical results obtained on the field, it is worth highlighting that the participatory approach, one of the key elements of this project, is being implemented successfully.

The project adopted a participatory approach even during the definition of project activities, when the local communities were directly involved and took part to a first negotiation to define ways of interaction and of co-financing.

When the project proposal was discussed with local community's representatives, it was warmly welcomed. In particular, people agreed on the objectives of the proposal that, by introducing perennial species, intends to create the conditions for breaking food dependence in the long term.

In Morocco the project is implemented through an established group of farmers (Cooperative Ennur) who already signed a preliminary agreement and who will take over the responsibilities for plantation management also after the end of the project. In a similar way in Tunisia the project is be implemented through an association constituted by the farmers that spontaneously adhered to the project.

People place their land at disposal and contribute to cover plantation and management costs. Furthermore, from the realisation of facilities (e.g. nursery in Morocco) and from complementary activities such as the integrative cash crops and training, they expect both the creation of entrepreneurial perspectives and an immediate positive impact on their income generation capacity and a good base for community development.

About the nursery, all efforts are being made to allow for it to begin, after the end of the project, a strong element of the community economy, able to disseminate the newly introduced mitigation techniques. These conditions should guarantee future maintenance and valorisation of field realisations, without further investments.

After the initial negotiations, local communities were involved in detailed project planning and scheduling, activity refinement and restructuring. They contributed to the amendment definition by proposing their changing needs and expectations.

It has to be reminded that the project hired a skilled international expert in participatory approach and gave him the task of defining the best ways to implement the participatory approach in the intervention areas. The aim was to give the project partners methodological guidelines to implement the participatory approach criteria and techniques, thus guaranteeing the coherence of this activity for the whole duration of the project. The consultant, with the support of local experts, first analysed the local situations identified in the beneficiary Countries and produced a report to be discussed by the Steering Committee. He also organised and carried out specific training sessions for local extension personnel, local trainers and NGOs.

The main result coming from this specific activity is a greater coherence and homogeneity in the participatory approach implementation in the different Countries and in the elaboration of guidelines to train the future local trainers.

Another interesting point (still in progress) is the production of specific didactic and dissemination material. The material will be produced to support training and dissemination activities (brochures and illustrated posters on the general contents of the project and on the specific activities in each Country; information material for the extension services; didactic material for training and awareness raising in the schools on some of the selected topics). The definition of common criteria concerning the approach and the contents is in progress.

A final consideration should be made about the need for flexibility in participatory projects. Early participatory evaluations allow for changes to better meet people needs. It is understood that people consciousness about the consequences of the starting decisions could improve and change with time: though at the beginning of the project a good preparation will be done through preliminary personal contacts (necessary to sign agreement with land owners), the possibility of changing specific activities or strategies should always been taken into account in participatory projects. This possibility can be seen as a potential and not as a risk, if actors are flexible and coherent.

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