

Sghaier M., Mahdhi N., Ben Zaid M., Ouessar M.
Institut des Régions Arides (IRA), 4119 Médenine, Tunisia

Abstract

Because of its geographical situation between the Mediterranean and the Sahara, Tunisia is among the most water stressed countries in the Mediterranean basin. In the arid regions and more precisely in the south-east of Tunisia, water harvesting represents an alternative to alleviate water resources. This water collected by a multitude of soil and water conservation (SWC) works, plays an important role in sustaining rainfed agriculture in the region (Sghaier et al., 2002). The aim of this paper is to identify the currently applied as well as potential strategies identified in the study area during the first national DESIRE project stakeholder workshop

1. Introduction

In the study site Oum zessar watershed, Tunisia, a stakeholder workshop on 'Land degradation and desertification-existing and potential prevention and mitigation strategies' was organized during the period 10-12 March 2008, with the objective to identify existing and potential strategies for land remediation.

The main objectives were:

- To initiate a mutual learning process among local and external participants by sharing experience and jointly reflecting on current and potential problems and solutions regarding land degradation and desertification.
- To identify existing and new strategies to prevent or mitigate land degradation and desertification.
- To select a set of these identified strategies for further evaluation and documentation with the WOCAT methodology

2. Presentation of the study area

The study area consists in watersheds of wadi Oum Zessar and wadi El Hallouf, the choice of this zone refers to its geographical situation, hydrological, ecological and socio-economic function. It is located in the North of the town of Médenine (figure 1) in the southern part of Tunisia. These catchments areas whose surface is around 897 km², are drained by tow principal wadi : wadi Hallouf in the west part and wadi Oum Zessar. The last one, runs out since the mountainous chain of Beni Khedache crosses the Northern delegation of Médenine and reaches the delegation of Sidi Makhlouf to flow in Sebkhass Oum Zessar before reaching the sea. The highest point of the watershed reaches an altitude of 713 m on the level of Jbel Moggar.

3. Methodology

In order to represent different forms of land degradation and techniques of soil and water conservation used in the study area, different methodological tools are used and adapted to the Tunisian context :

- Photo language and water cycle
- Transect walk
- Plenary work and group works with farmer
- Plenary session: presentation and discussion of group work
- Problem tree
- WOCAT technology

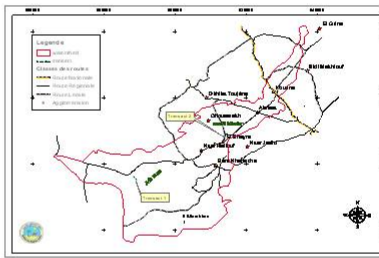


Figure 3. Transect walk.

4. Causes and effects of land degradation

The main causes and effects of land degradation given by farmer are represented by figure 4. Physical, Socio-economics and Institutional aspects are considered as the main factors of land degradation in the region.

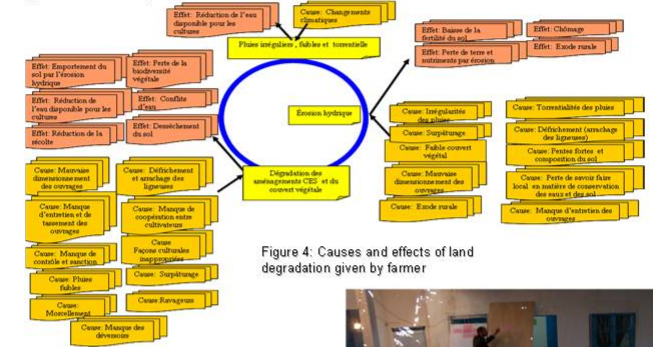


Figure 4: Causes and effects of land degradation given by farmer



Photo 1: Plenary session with farmer to identify causes and effects of land degradation

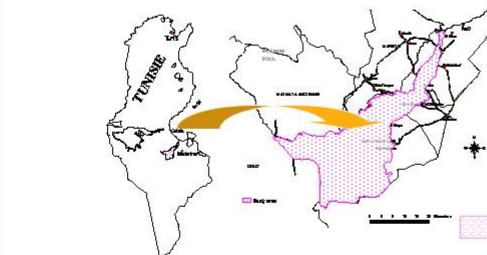


Figure 1. Study area

2-1-Land use and production systems

In the study area, most rainfed farming were based on water harvesting techniques (WHT). This sector is, and will remain, an important component of the region's agricultural production system. Rainfed agriculture grown under WHT play an important role in rural development, but its productivity is, however, low compared with those in countries of the Mediterranean basin and severely limited by chronic rainfall deficits (Sghaier et al, 2002; Mahdhi et al, 2005).

Three production systems are identified:

- The mixed crop-livestock production system
- The rainfed agricultural systems grown under soil and water harvesting techniques (SWHT)
- The rainfed annual crops

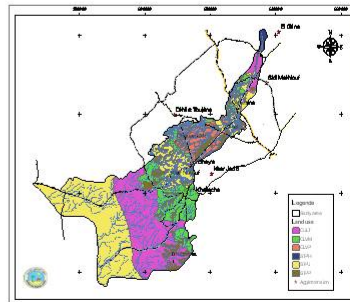


Figure 2. Land use

5. Already applied solutions at the local level

The main used technologies in the study area are:

- Watershed treatment:** It consists of jessour in the mountain area and tabias in the piedmont.
- Consolidation of SWC works:** Pastoral and fruit trees plantations.
- Surface water mobilization:** Three types of structures have been installed: recharge units, flood spreading units and cisterns.
- Enclosures:** Rangeland resting.



6. Recommendations and encountered difficulties

- There is a rich local know how to cope with natural resource but requires dialogue between stakeholders and scientists to guarantee successful implementation of SWC strategies,
- The causes and effects of land degradation is more complex in arid zones,
- The learning approach is not very easy to understand for the local stakeholders,
- The full and active participation of the stakeholders needs a lot of patience and mutual trust.

Acknowledgments

This work is part of the EU funded project DESIRE. The participation and the assistance of all local stakeholders (farmers, regional department of agriculture (CRDA), NGOs (A.J.Z, APB), etc.) is highly appreciated.

References

- Mahdhi N., Bachtat M., Sghaier M. (2005). Conservation des eaux et du sol et efficacité technique de l'agriculture pluviale en zone aride. Cas du bassin versant d'Oued Oum Zessar. *New Médit* n°7, pp. 52-56.
- Sghaier M., Mahdhi N., de Graaff J., Ouessar M. (2002). Economic evaluation of water harvesting at catchment's scale: An application of the FORCES MOD model. In: De Graaff J. & Ouessar M. (Eds.) 2002. Water harvesting in Mediterranean zones: an impact assessment and economic evaluation. TRMP paper n°40, Wageningen University, The Netherlands, pp. 101-113.
- DESIRE, WorkBlock3-CDE: L4s Guidelines for stakeholder Workshop 1 'Land degradation and desertification-existing and potential prevention and mitigation strategies'
- DESIRE, WorkBlock3: Manuel d'utilisation des bases de données WOCAT.