

A newsletter published by the DESIRE project - a project funded by the European Union's 6th Framework Program 'Global Change and Ecosystems'

# Newsletter



## DESIRE reports on a third year of progress

*Study sites are busy combating desertification with new strategies, - so how is it going?*

In this issue:  
News from the  
plenary meeting  
in Morocco

### Selecting strategies

The main objective of the DESIRE Project is to work with land users and other stakeholders, finding new ways to tackle desertification and promote sustainable land management practices. Using a series of questions and discussions at workshops, scientist and stakeholders have been working together to suggest optimum solutions for local areas. Now, they are trying the strategies out, to see if good ideas in theory are also good ideas in practice.

Last year scientists and stakeholders completed the process of selecting sustainable land management strategies in the 16 DESIRE study sites. They all used the same procedure developed by WOCAT (World Overview of Conservation Approaches and Technologies). This meant that the strategies they chose would have a sound scientific and practical basis. At the first workshop scientists and stakeholders learned together about water and biomass

cycles, local conditions, and the choice of strategies available to suit the local context. Standardised questionnaires were used for appraisal and evaluation. Then through a second workshop the WOCAT technologies database and an on-line decision support tool provided an output of the most promising technologies.

### Promising ideas

Each study site arrived at a list of two or more measures to try out. Although the technologies themselves may not be new, the innovation is in matching the technology to the local context. On cropland the strategies included minimum tillage, terraces, drip irrigation, mulching, vegetation strips, water harvesting and gully treatment. All these approaches concentrate on making the most of a scarce water resource and protecting the soil surface from erosion by water and wind. On rangeland this might be achieved by less intensive grazing schemes and planting of suitable shrubs. Details of the WOCAT system can be seen on the Harmonised Information System on the DESIRE website:

<http://tinyurl.com/yzpsw2b>

A summary of the strategies being

trialled in DESIRE is given on page 3.

### Monitoring

With the strategies chosen, the emphasis is now on establishing trials and field experiments, and monitoring to see how successful the measures will be. Every study site has completed a detailed Site Implementation Plan. At the recent plenary meeting in Morocco, project partners prepared posters to illustrate their strategy testing in each study site, and these can be viewed in the Harmonised Information System on the DESIRE website at <http://tinyurl.com/cx47u>

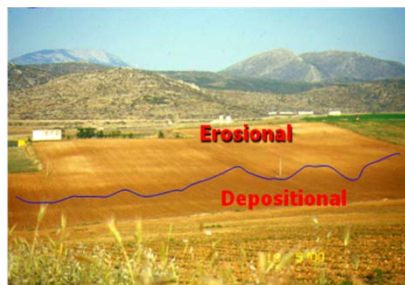
Many of the study sites are monitoring physical variables such as meteorological data, soil moisture, soil water quality, erosion by water or wind. These measurements will help to provide evidence of the effects of different treatments and practices. At the end of the first growing season, the success of the harvests under different treatments give a preview of the likely success of the complete strategy. For example, in Spain, water harvesting for cereals and use of a green manure in almond orchards are working well.

## Assessing desertification

DESIRE is using and testing the assessment mapping procedure developed by the LADA and WOCAT projects to give a spatial overview of desertification problems. The method is based on a Land Use System (LUS) map that divides the area into land use classes. An accompanying mapping question-naire (QM) records details of the main degradation processes, and the impact of existing soil and water conservation measures.

DESIRE is also using indicators to assess the extent and risk of desertification. Using a farm survey questionnaire, each study site is identifying the most appropriate and effective indicators suited to a range of local physical and socio-economic conditions. The functions performed by these societal or environmental characteristics and systems will then be used to develop decision indicators.

The photos below demonstrate visual indicators, where slopes and bare soil increase erosion and desertification risk



## Measuring success of strategies

While scientist are making physical measurements, the local land users and stakeholders are also being involved in the monitoring, either with practical tasks, discussing indicators, or with assessment of results. This means that cultural, social, political and economic factors are considered along with the scientific measurements, and contribute to the final assessment of the degree of success. This is very important. The strategies might not be used in the future unless they are acceptable to the land users.

## Soil erosion in China

In the Yanhe River basin, on the loess plateau, it is soil erosion that is the predominant desertification process. The region is arid to semi-arid, with most of the precipitation in summer or early autumn.

Dry farming is the dominant land use, and the vegetation is secondary forest in the south, and forest and grass in the north. The major crops are winter wheat, maize, millet, buckwheat, potato, and many kinds of beans. Since the implementation of the "Grain for Green Policy" in 1998, thousands of ha of sloping crop land have been converted into forest and grassland. The local farmers can get annual subsidies, in the form of cash and cereals, from the central government.

Experimental plots to measure soil erosion have been set up on the slope of an orchard in Miaowan village under different treatments: natural slope without vegetation cover, contour tillage and contour tillage with mulching.



Plastic film is being used to assist harvesting of rain water and promote deeper infiltration of soil water. Other strategies include building of bench terraces and reforestation.





An overview of measures to combat desertification being trialled in DESIRE study sites

| Study site                         | Measures   | Specifications   | Land use     |
|------------------------------------|--|--|--------------|
| Spain, Guadalentín Basin           | Reduced tillage of dryland cereals                                   | With disc-plough   | cropland     |
|                                    | Green manure for almonds   | Seeding of cereals and <i>Vicia sativa</i>   | cropland     |
|                                    | Reduced tillage of almonds   | 2 tillage instead of 3-5 per year  | cropland     |
|                                    | Traditional water harvesting   | Earthen wall to divert water   | cropland     |
|                                    | Organic straw mulch under almonds                                    | Reduce evapo-transpiration   | cropland     |
| Portugal, Maçao and Góis           | Preventive forestry  | Strategic management of fuel strips  | forest land  |
|                                    | Prescribed fire  |  | forest land  |
| Italy, Rendina Basin, Basilicata   |  | Monitoring of existing measures, such as minimum tillage                           |              |
| Greece, Crete                      | No tillage   |  | cropland     |
|                                    | Sustainable grazing  |  | grazing land |
| Greece, Nestos Basin, Maggana      | Transport of freshwater from local streams                           | Instead of saline groundwater  | cropland     |
| Turkey, Konya Karapinar Plain      | <i>Caragana korschinskii</i> planting                                | In rows perpendicular to dominant wind direction, i.e. E-W.                        | grazing land |
|                                    | No tillage   |  | cropland     |
| Turkey, Eskisehir Plain            | Sloping terraces, vegetated borders                                  |  | cropland     |
|                                    | <i>Caragana korschinskii</i> planting                                | Contour parallel planting  | grazing      |
| Morocco, Mamora / Sehoul           | Vegetative strips  |  | cropland     |
|                                    | Mulching combined with crop rotation                                 | Cereals and legumes  | cropland     |
|                                    | Gully treatment  | Treatment with trees / bushes, etc.  | grazing      |
| Tunisia, Zeuss-Koutine             | Jessour  | Runoff water harvesting technique  | cropland     |
|                                    | Gabion check dam   | Flood water harvesting   | cropland     |
|                                    | Rangeland resting  | Enclosure  | grazing      |
| Russia, Djanybek                   | Drip irrigation  |  | cropland     |
| Russia, Novi, Saratov              | Drip irrigation  |  | cropland     |
| China, Yan River Basin             | Level bench terraces   |  | cropland     |
|                                    | Reforestation  |  |              |
| Botswana, Mopipi, Boteti Area      | Biogas   | To conserve woody vegetation   | grazing land |
| Mexico, Cointzio Catchment         | Sustainable land use   | To reduce soil erosion   | mixed        |
| Chile, Secano Interior             | Zero tillage   | Including crop rotation  | cropland     |
| Cape Verde, Ribeira Seca Watershed | Forestation according to the climate for each zone of the study site |  |              |
|                                    | Green belts on slopes  | Planting <i>Aloe vera</i> and <i>Cajanus cajan</i> or <i>Leucaena leucocephala</i> | cropland     |





## Góis, Portugal

In this forested area prescribed fire is being tested, as an alternative to wildfire. Wildfire tends to burn through a catchment at a high temperature. Prescribed fire can be used to reduce the fuel load and make fire breaks. Soil erosion and other detrimental effects to the soil structure are reduced.

## Rendina, Italy

Detailed monitoring of the environment establishes the relationships between land use and management with soil

erosion and provides data to test a Connectivity Index. This can be used to assess the degree of improvement when new strategies are trialled

## Nestos basin, Greece

Field experiments show the reduction in yield of cereals if saline groundwater is used for irrigation (3.4 tn/ha) as opposed to freshwater (9.3 tn/ha).

## Boteti, Botswana

Cow dung is being collected to convert to biogas. With this alternative source of fuel, brushwood will not be collected so

extensively, and the natural vegetation can continue to protect the grazing lands from soil erosion.

## Marmora, Morocco

*Atriplex* is being planted to limit the extension of gullies. Mulching and minimum tillage are helping to reduce soil erosion.

## Zeuss Koutine, Tunisia

Water harvesting techniques (jessour and tabias) are being used to combat scarcity of water and rangeland degradation.

# DESIRE NEWS in Brief

### DESIRE AT COP9

The 9th UNCCD Conference of the Parties (COP9) was held in Buenos Aires in September/October 2009. DESIRE was represented at a joint side event with LADA and WOCAT, demonstrating to delegates how LADA mapping and WOCAT methodology is being tested in DESIRE study sites. The methodology to map and assess land degradation, and select strategies to address the problems, will be transferable to other areas. It provides a decision support

tool for establishing mitigation strategies that are likely to be successful.

### Symposium 'Assessing benefits of SLM - Key for success'

A symposium on assessing benefits of sustainable land management strategies was organized on behalf of the WOCAT and DESIRE projects by the Centre for Development and Environment and the University Mohammed V, Rabat, just prior to the DESIRE plenary meeting in

November 2009.

Representatives of the Faculty of Human Sciences, and the Moroccan Ministries of Agriculture and Forestry also attended the meeting.

### Announcement of the Contest winner

A contest was organised among DESIRE study site teams for the best documentation and assessment of SLM strategies. The test was won by the team from the Guadalentín study site in Spain. This team wins a visit to another

tion as opposed to study site of their choice. A journalist will report on the travel in the international press. The second and third prizes were awarded to the teams from the Mamora-Sehoul study site in Morocco and the Mação study site in Portugal, respectively.

### Euronews documentary

Euronews has approached ALTERRA to make a documentary on DESIRE. So some study sites may expect a film crew to visit!

The DESIRE project (2007-2012) is funded by the European Commission, VI Framework Program, 'Global Change and Ecosystems' and brings together the expertise of 26 international research institutes and non-governmental organisations (NGOs). This project is coordinated by ALTERRA - research institute for a green living environment in the Netherlands.

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Website: <http://www.desire-project.eu>

Information System: <http://www.desire-his.eu/>

Contact DESIRE Coordinator: [Coen.Ritsema@wur.nl](mailto:Coen.Ritsema@wur.nl)

DESIRE Communications: [ngprojects3@googlemail.com](mailto:ngprojects3@googlemail.com)

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