

COINTZIO WATERSHED, MEXICO – combating soil erosion

The Cointzio watershed in Michoacán state, Mexico, has a temperate semi-humid climate with a 6 month rainy season. The landscape can be divided into three parts: a plain with irrigated highly mechanized agriculture; red iron-rich clay soils and fragile loamy soils with low mechanisation and subsistence farming on the hills; and forest at altitudes above ± 2300 m. The usual system on the plain is for corn production one year, followed by fallow the next year, although it is possible to grow crops every year. Cattle are kept on the fallow and also on the common land.

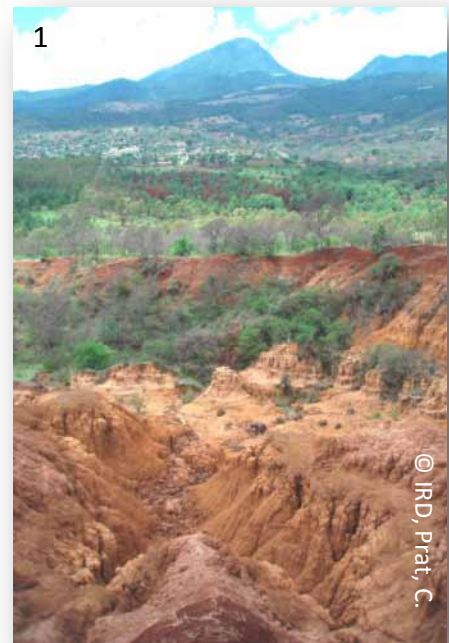
DESIRE experiments involving stakeholders show that from 130 rain events in a year only 6 to 12 events resulted in soil erosion. On the most fragile soils barley production as fodder is better than corn, and the traditional association of corn/beans/zucchini is the best protection system.

Soil erosion measured on plots varied between 1 to 5 t ha⁻¹ y⁻¹ which is quite low. However, runoff can be extremely high during fallow seasons (over 80%) and may result in severe gully erosion on slopes. To reduce soil erosion and runoff, it is necessary to have crop residues covering at least 30% of the surface to reduce the runoff to < 10% of the rainfall amount.

The other main cause of land degradation is soil compaction, due to both soil properties and the weight of the cattle. It is therefore essential to limit the numbers of grazing animals and control the feeding areas. All these actions address the sustainability goals of the DESIRE Project.



L'Institut de recherche pour le développement (IRD), France



1. Potrerillos , showing soil and gully erosion, 2008
2. Tensiometers measured soil water at different depths, just before harvest, La Cortina, December 2009
3. Field plots, Huertitas, 2007
4. Ploughing with horses, La Cortina, 2007

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Newsletter 4

Progress with monitoring the field experiments

All the chosen strategies are being implemented and monitored



At all the DESIRE study sites scientists have consulted with local stakeholders to choose and implement strategies to mitigate land degradation and desertification.

Standard questionnaires from WOCAT (World Overview of Conservation Approaches and Technologies) were used to evaluate, share and document the strategies. Then some were selected for further investigation using the WOCAT decision support tool. This "learning for sustainability" process helps to ensure that the

measures selected will be successful. Successful strategies will have to satisfy evaluation criteria of ecological sustainability set by scientists, such as significantly decreased rates of soil erosion, but also be attractive and cost-effective for long term land use.

Scientists and stakeholders are currently busy monitoring the effects of the chosen strategies. In all study sites there are interesting stories emerging, and in the following pages some preliminary results are described.

Each page is from a DESIRE study site partner:

University of Aveiro, Portugal (Mação site); Democritus University of Thrace, Greece (Nestos river basin); University of Botswana (Boteti site); L'Institut de recherche pour le développement (IRD), France (Cointzio site, Mexico); Instituto de Investigaciones Agropecuarias (INIA), Chile (Secano interior)

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For more information and contact details see:

- The DESIRE Harmonised Information System: www.desire-his.eu and DESIRE website: www.desire-project.eu

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