A global initiative to combat desertification

Instituto Nacional de Investigação e Desenvolvimento Agrário

Potential Technologies to combat Desertification, land degradation and to improve farmer's income in the Ribeira Seca Watershed, Cape Verde.

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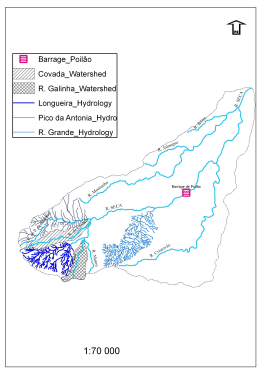
Cape Verde _ Santiago Island_ Ribeira Seca Watershed Study Site

The results of research, fieldworks, the philosophy of DESIRE Project, and the 2nd stakeholders meeting led us to set some goals:

1. Combating desertification and land degradation based on existing technologies and new ones aiming a harmonious and participatory envolvement of land users.
2. Based on the WOCAT data base, select 2 technologies using a consensus approach that would be implemented and tested on cropland affected by erosion.
3. Monitoring these 2 technologies to analyze their relevance and effectiveness in land protection and improvement of farmers living conditions.

RIBEIRA SECA WATERSHED



Ribeira Seca watershed is located between latitudes 15º07'40''N and 15º01'55'' S and longitude 23º32'05''E and 23º38'40'' W. It is the largest basin of Santiago with a surface drainage of 71.5km^2 (Fig. 1). It crosses all 4 bioclimatic zones and 3 Municipalities. Ribeira Seca is also the most mountainous site of Santiago with an unlevel of 1394 m. Of its 14 343 inhabitants (census 2000), 42.5 % is under 15 years old. 50 % of the population consists of women, of which 42.5 % is heads of household. The main activities of the population are agriculture (rainfed and irrigated), livestock and fisheries. Although seriously affected by erosion and human pressure, agriculture is still the main economic sector. Since 2006, the agriculture sector in the basin has experienced a tremendous growth due to the construction of the Poilão's dam, providing a large volume of water for irrigation. The population of Ribeira Seca is well organized into community based associations, with more than 10 communities emerging in recent years. Each association is affiliated under the umbrella of a larger organization named OASIS (Organization of Farmers and animal breeders associations of Santiago), all legally recognized. The participation of women in each association is fairly representative. These rural groups play an extraordinary role in the protection and conservation of natural resources in partnership with the Government, the political and local authorities, and NGOs.

THE MAIN DRIVERS & PROBLEMS OF DESERTIFICATION & LAND DEGRADATION

Fig.2 Land after harvesting

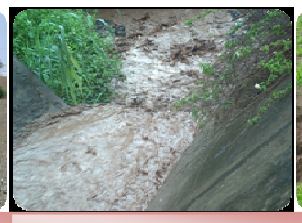


Fig.3 Flash flood

Fig.4 Gully erosion

Fig 5 Off site Sedimentation

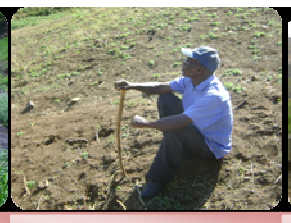


Fig 6 Local stakeholder

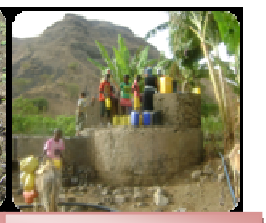
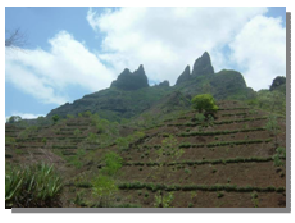
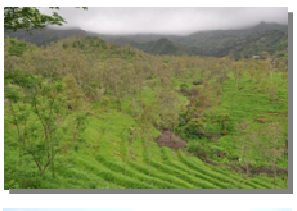


Fig 7 Looking for water

The socio-economic vulnerability of the rural families, associated with the low and poorly distributed rainfall, forces the farmers to overuse biological materials of soils (Fig. 2). Thus, the bare slopes quickly become an easy prey for rainfall erosivity that sweeps away soil fertility, mineral and organic matter (Fig. 3). This causes rill erosion upstream, while downstream, where runoff concentrates, gully erosion (Fig. 4) accentuates from year to year. This export of original land (Fig. 5) reduces the capacity of ponds to store water, disrupts the cycles of water and biomass, and causes decrease of crop production and ecological imbalance ecosystems. Therefore, the concerns of farmers (Fig. 6) increase and the search for drinking water (Fig. 7) in the arid and semi arid regions, where the deficit water is more pronounced, becomes more chronic.

POTENTIAL SOLUTIONS TO COMBAT AND MITIGATE DESERTIFICATION AND LAND DEGRADATION





The vegetation barriers (upper figure) based on *Aloe vera, Leucaena leucocephala* or *Cajanus cajan* used to create green belts on the sides of rain fed crops (maize and beans) play an important role in the fight against soil degradation and the recovery of degraded lands. The ecological impact of this technology is literally the reduction of slope, soil fixation through the root system of plants, sediment retention and improvement of organic matter and soil fertility (especially the last two species). The economic impact will be at the level of husks (*Cajanus cajan*), fuelwood (*Leucaena leucocephala*) and increased performance of animals whose rations are supplemented with the biomass of Leucaena and Cajanus.

Arboriculture (tree species and fruit trees) plays an extraordinary role in conserving soil and water (middle and lower figures). Although other forms of energy are available on the market, fuel wood continues to be the main energy source for rural families. With this technology, stakeholders aim, not only to improve the vegetation cover and infiltration of rainwater, but also to diversity sources of incomes for farmers with the performance of fruit tree products. Several fruit species will be introduced in all bioclimatic zones, including arid regions.