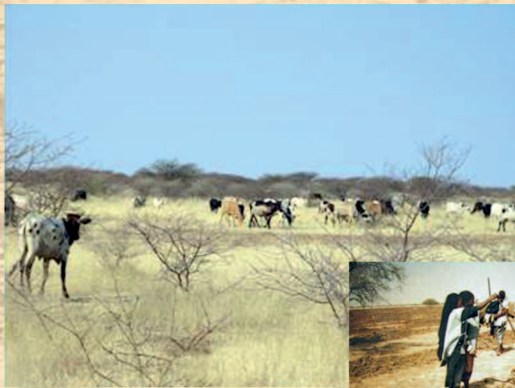


Spectacular results in a context of open pastoral areas



Both the magnitude and extent of land degradation in the Sahel, have led to experimentation, since the late 1990s, of mechanized techniques to reverse the rampant desertification. In this context was introduced the Delfino (invented by Italian engineer, Vallerani) plough which allows for mechanical design of anti-erosion works or micro basins as half-moons. Combined with the direct planting of local forest species, this technology has been experimented, since 2001, by the NGO REACH Italia in the town of Gorom Gorom (Burkina Faso). It provides very conclusive results, far beyond expectations in a context of pastoral areas open for free access to animals (no fence, no guards).



Competitive land management costs:

the Delfino+direct seeding technology provides a woody cover which is at least twice cheaper than the traditional techniques typically used in the Sahel

The average cost of land management is 73 650 F CFA (112€) and may even be reduced by over 22% when using the mechanical technical unit optimally i.e., 800 hours/year.

The technology provides on average 685 live trees per hectare with a survival rate of 79% or a net production cost of the shrub to 107 francs CFA (0.1€).

A seedling in a sheath is usually charged 75 Francs CFA, from the nursery, (excluding transportation, planting, watering costs, etc.). Survival rates of conventional plantations from seedlings raised in nurseries barely reached 50% in the Sahel



DEGRADED LANDS MECHANICALLY RECLAIMED FOR FORESTRY AND PASTORAL ACTIVITIES:

An efficient technique in sahelian pastoral zone



Partenaires : Union Européenne (FOOD/2007/144-101)
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European Union

Spectacular results in a context of open pastoral areas

5 to 30 more grass fodder...

* 420 to 2090 kg/DM/ha i.e., on average 1200 kg/DM/ha on sites developed with this technology against an average of 90 kg MS/ha on the control plots. This represents a surplus of 22 to 106 grazing days/Tropical Cattle Unit (250 kg-adult cattle) per hectare constructed.

* Improved richness of the flora: 44 species identified on treated plots against 24 species on the surrounding control rangeland.

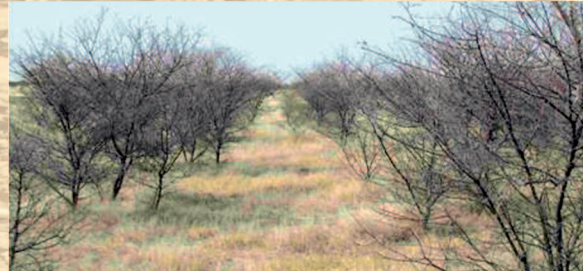
* A high proportion of grass species of good fodder value- that attest to improved quality of the pasture reconstituted.



6 Seasons



Reforesting the Sahel in a different way...



The survival rate of seedlings of forest trees on sites developed with the *Delfino* plough, from 2001 to 2008, is estimated at 79% on average against an average of 20% for conventional reforestation.

The number of trees per hectare is estimated at between 399 and 856 new individuals

In a region where traditional plantations have given seemingly little results on the ground, due to various constraints, the *Delfino*-mechanized work associated with direct planting of forest species allows the establishment of a sustainable woody cover

What are the success factors?



1. **Quality of work**, which depends primarily on the type of land and skill level of the tractor driver. A land which is worked with the *Defino* plough according to standards, significantly improves its hydrodynamic properties, including infiltration, which promotes better root development

2. **The choice of local tree species** adapted to the region (*Acacia raddiana*, *Acacia Senegal*, *Acacia nilotica*, *ziziphus mauritiana* etc.)

3. The technique of direct planting promotes better root system development. In conventional reforestation, the seedlings placed underground when the aerial part is already sufficiently developed, have more water requirements their undeveloped roots cannot meet.

Regional perspectives replicability of the technique

Degraded lands, because of their importance in terms of size, are a potential resource to improve agro-forestry and pastoral production and contribute to food security in the Sahel. The reclamation/rehabilitation of these lands thus constitutes an important lever for improving the incomes of rural families that are heavily dependent on the state of these resources, and also to stabilize them in their local communities.

The very convincing results achieved by the NGO REACH Italia in the Sahel area of Burkina Faso is an alternative technique potentially very interesting to reclaim several hundreds of thousands of hectares, efficiently and competitively, in West Africa.

Replicability of this combination of technologies, however, depends on :

* *The nature of the soil; sandy loam to clayey soils seem to be more efficient, with a lifespan of structures capable of promoting regeneration of woody species;*

* *Trained staff, including the tractor driver;*

* *Defining land management objectives ex ante in terms of area and density of half-moons: the more you have reclaimed areas, the more obvious and cheaper it is for you to reverse the « degradation-desertification » trend;*

* *Involvement of the populations and their active participation to ensure, as from the early years of tillage, application of reclamation activities of farmable lands.*