The Vetiver Network International

La Plantation Bemasoandro SURL

The Vetiver System, a biological solution for development and conservation at Madagascar

How Vetiver System applications can reduce poverty and mobilize communities

Madagascar, island of high biodiversity

The Island is separated to the African continent, and was populated by humans only 2.000 years ago.

The « Great Island » contains old species and the highest endemic level (average 75% of fauna and flora are endemic)

Madagascar, island of high biodiversity

Under these rich ecosystems, the soil is remained very fertile, but only on a thin topsoil

Environmental context

- 80% of population living in the country
- 3000T/ha still of cultivable layer
- 400T/ha/year are washed away by erosion
- Slash and burn cropping is the traditional practice
- 85% of rainforest has disappeard
- Agriculture is not sustainable and not productive
- More than 300.000 ha are burned each year

Environmental problems

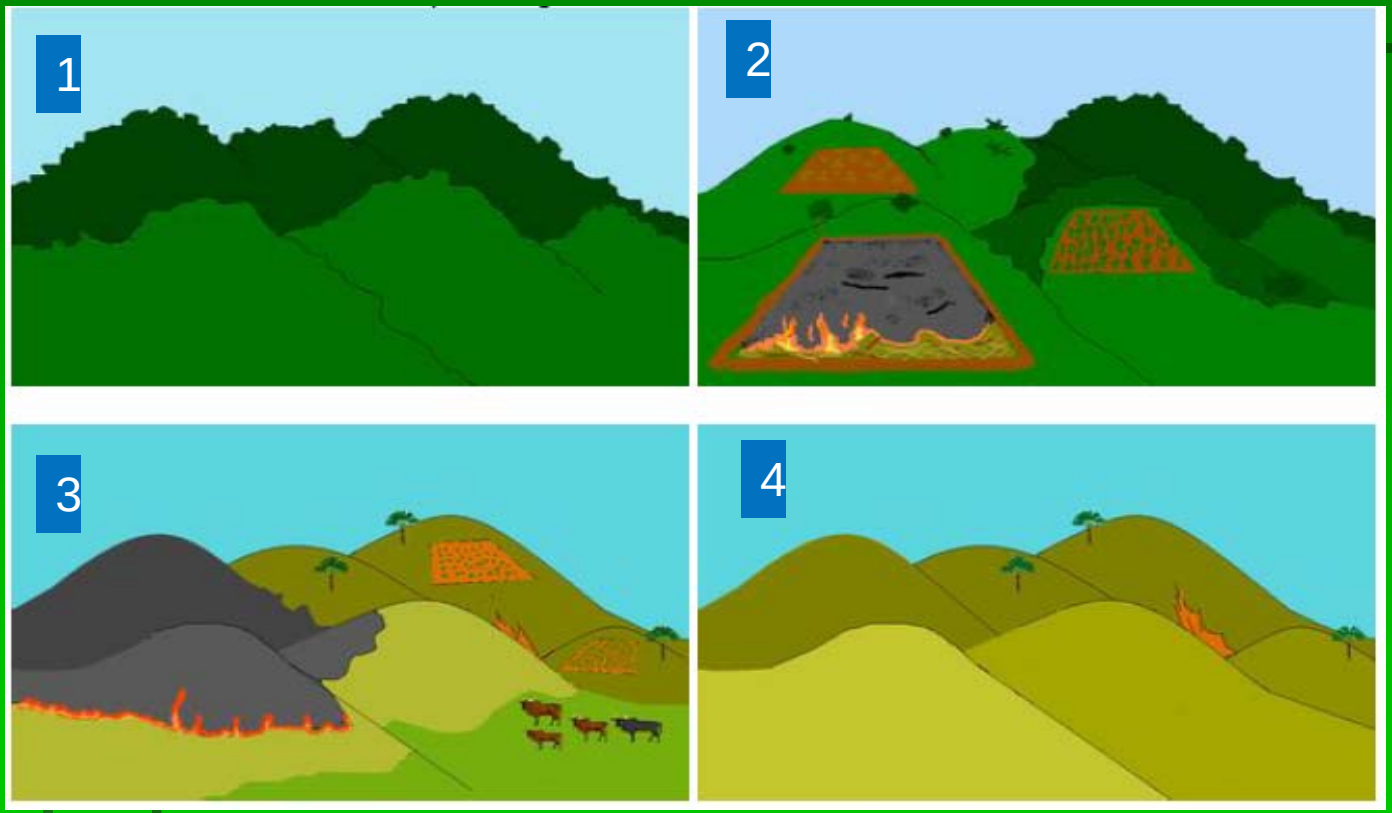
Consequences=

-**erosion** (loss of soil fertility and sediments, loss of moisture, deteriorated lands, gully erosion…)

-**sediments** (loss of rice-fields, water quality decrease, loss of mangroves and coral reefs…)

-**floods** (infratructures degradation and damages for crops, health and others activities)

Agricultural practices



1: The soil is still fertile, under vegetation cover

2: With the high soil fertility, farmers sow upland rice after slashed and burned the lands. After the nutrients are washed away by erosion, every year they have to clear another parcel

3: Set fire for fodder

4: No crop is able to grow on this severely deteriorated lands

Slash and burn cropping force the farmers to clear another parcel of land each year and results to a severaly deteriorated land

Agricultural practices

Slash-and-burn practice is the traditionnal agriculture practice: bare hillsides just before rainy season to grow upland rice.

This could be possible if the density of population does not exceed 10 persons/km², while presently there are 30 persons/km², and 50% of the 18 millions inhabitants are less than 18 years old

Agricultural practices

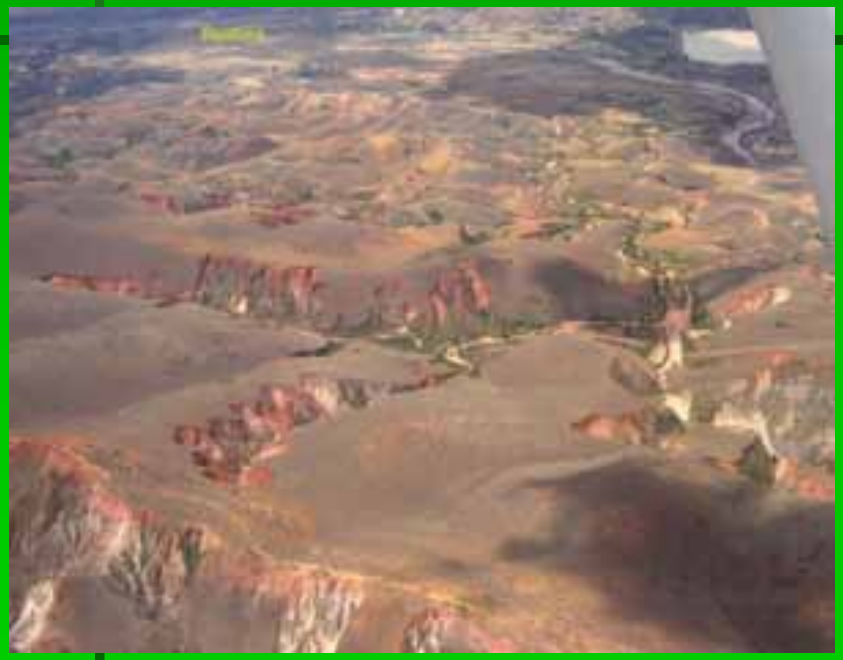
Problem: bare land, slope without soil protection

= lands degradation

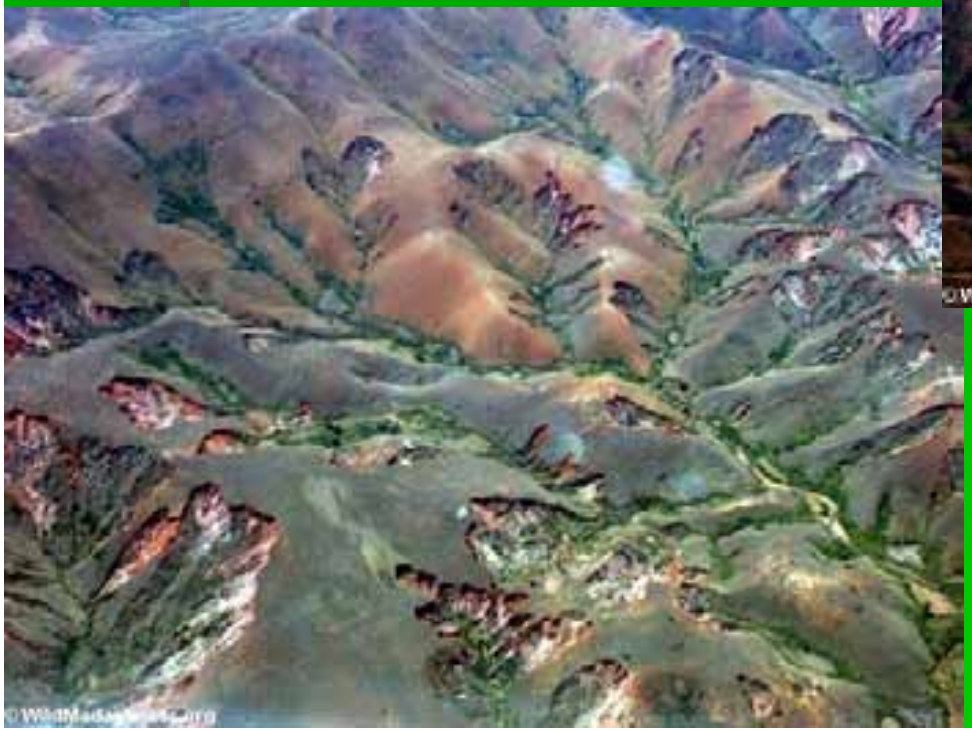
Erosion due to agriculture practices and a lackness of protection

The nutrients are washed away by erosion. After few years the soil has definitevely lost its fertility.

Erosion, lavaka, gully erosion and sediments due to lack of protection

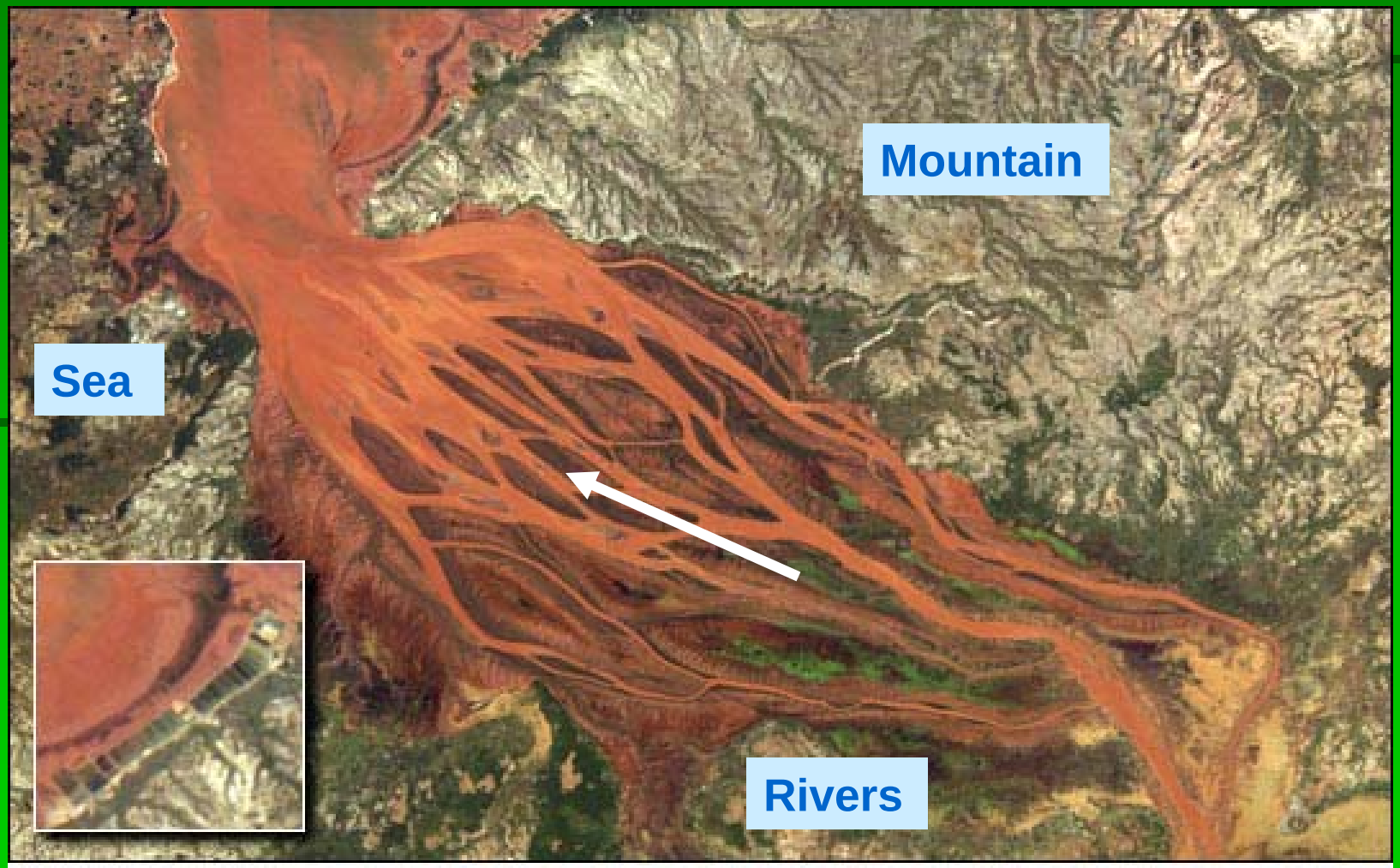


Results: degraded lands…



View from the plane of sediments washed away and cared by rivers

View from space of sediments washed away and cared by rivers



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Why the Vetiver Grass Technology (VGT) is the best answer?

-Efficient for soil&water conservation

-Easy to promote the technique in a large scale and to propagate the grass by farmers

-Simple and cheap to apply by the farmers themselves on their fields

-Adaptable to all conditions in Madagascar

-Promote sustainable farming: farmers can cultivate the same part of land for many years with improved yields, without have to move their fields every year in order to find fertile soil.

Vetiver for sustainable agriculture and rainforest conservation

Once the soil fertility is maintained, farmers will not have to clear another parcel of land every year and then it saves forests, water&soil, also ricefields from sediments

Agricultural practice and popularisation of VS use: case study of Vohimana

Bare slope and erosion on slash-and-burn land for rainfed rice

Due to this practice, the loss of soil fertility is so high that farmers have to clear a new parcel of land every year. The rainfed rice can not grow a second year on this several eroded lands.

Here are some VS uses by the farmers for sustainable agriculture, after the VS was popularized during few years


These terraces are established only by VS action, planted 4 years ago for vegetables culture
Results: sustainable agriculture with better fertility and moisture, mulching, no soil loss

VS for infrastructures protection

The VS offers many solutions for infrastructures protection

such as:

- **Irrigation and drainage**
- **Roads and railways**
- **Buildings and property**
- **Riverbanks, bridges**
- **Dune, littoral**

The VS has to be applied under technical criteria

VS for infrastructures protection

- Other techniques can be combined but never with the same efficiency to control erosion: grass turf , wood fascines, trees plantation,…

The concurrence and the shade from the other vegetation can suppress the Vetiver growth.

- A species commonly used, the bamboo, can increase the risk of erosion: the canopy is too tall in comparasion to its roots system, and the hole made to plant the bamboo can increase infiltration and make landslide.

- The drainage must be considered very importantly, because the runoff from the bare area is increased, like on the slopes along a road.

How Vetiver applications can reduce poverty

Vetiver capacity:

-90% of sediments stopped

-70% of water runoff reduced

-50% of fertility improvement

-Better moisture, recharge of groundwater and water quality

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Popularization of Vetiver:

- Help-agencie or NGO

- Private company

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Application by the farmers:

- Improvement of the yields

- Slash-and-burn practice change to sustainable agriculture, then protection of the lands, forests, water&soil

- Opportunities with Vetiver: handicraft, fodder, mulching, tchatch, selling material plants,…

Mobilisation of communities into Vetiver business

Project using VS for erosion control, soil protection or slopes stabilisation, process through the local communities for plants production and plantation on site

Generate a lot of positive social, economic and environmental impacts. The people who is trained to plant Vetiver (to produce plants and to control erosion) will catch nicely the interets of VS and will apply on their lands.

With a snow-ball effect, many farmers will apply VS on their crops, and many lands, forests, water&soil will be saved, while agriculture yields will be improved

Mobilisation of communities into Vetiver business

To sell the material plants, to produce and to propagate the Vetiver in nurseries are good opportunities for farmers. The way of management must be adapted to the poverty level.

Mobilisation of communities into Vetiver business

The nurseries can be set up near and along the end user sites, and the propagation and maintenance works are delegated to the local farmers. Then they beneficiate of training, materials, know-how, employment, and they can understand nicely the interests of using VGT.

Mobilisation of communities into Vetiver business

Positive Impacts from a project using VS for erosion control implying local communities:

- give employment and revenues during the work

- farmers acquire know-how on VGT application for land conservation and crops protection

- farmers catch easily the interests of using VGT and can reproduce it on their fields without help needed

- good opportunities from by-products: selling planting materials, handicraft, mulching, thatch, fodder,…

- setting-up a sustainable agriculture

Vetiver to improve water quality at Antananarivo

L'insalubrité frappe la population

L'insalubrité commence à miner le quotidien des habitants des bas quartiers. Les grosses pluies entraînent plusieurs infections.

LES pluies de ces derniers jours aggravent l'insalubrité dans les bas quartiers de la capitale. L'eau n'est pas évacuée et se masse dans les ruelles, comme à Andavamamba, Manarintsoa, Antohomadinika et autres. La circulation devient même impossible. Les habitants doivent utiliser le système D pour traverser d'un lieu à l'autre. Des ordures se mélangent même avec ces eaux impropres. L'odeur qui s'en dégage devient insupportable. A ce problème s'ajoute le déversement des eaux des tinettes, faute de vidange.

« La situation n'évolue pas depuis des années, c'est comme si on était condamnés à vivre avec l'insalubrité », se plaint Lambahoany, un septuagénaire habitant le quartier de Manarintsoa centre. A Ampasika, le niveau

PHOTO : HERY RAKOTONDRAZAKA

Il n'est pas toujours facile de se déplacer dans certains quartiers avec les présentes averses.

Antananarivo, with 2 millions inhabitants, has no proper water treatment facilities. Thus, the water quality is very contamined and highly polluted. During rainy season, floods, erosion, sediments generate many problems.

Highly polluted water

However this capital is also an agricultural town, with rice fields, vegetables and cattle farming, fishing…and many activities depend on the water network of the city, even polluted.

Promotion for VS use

First Demonstration of VS to improve water quality

Combined with banks protection

Promotion for VS use

Demonstration of VS for water treatment: Hedges plantation on small dikes into shallow drain through the flow to catch the pollution. Next year, once nicely established, the hedges will be completely closed with new plants in the middle.

Constraints to expansion of Vetiver System

- Customs, mentality
- Traditional and ancestral practices
- Wrong and incorrect applications by some
- Prejudice about the grass
- Corruption and method of awarding contracts
- Slowness to act from NGO, GO and administrations
- Lack of openmind to change practices

Malagasy names of Vetiver Grass

- Vendramboalavo
- Vendrambazaha
- Verobe
- Vetivera
- Fataka

Activities of La Plantation Bemasoandro

- Supporting VGT applications
- Promotion and popularization of VGT
- Setting up demonstration sites for:
  - Erosion control, slopes stabilization
  - Revegetation
  - Crop improvement and soil conservation
  - Water quality improvement
  - Handicraft with roots
  - Nurseries with local communities
  - Material plant production
  - Landscaping
  - Riverbanks protection

Propagation in local communities nurseries of Vetiver strips

Exposition of Vetiver strips and explanations about interests of VGT use.

Thank you for your attention

La Plantation Bemasoandro