

VETIVER SYSTEMS FOR LAND REHABILITATION

- **With its special and unique characteristics as presented above, Vetiver grass can replace and/or combine with other trees and other local grasses etc. forming a closed hedgerow to help reduce many types of natural disasters.**
- **Vetiver grass is a very cheap alternative, costing only about 10-20% of other traditional methods;**
- **At the same time, it is also very effective and easy to use, so that it can be used by local communities;**
- **More importantly, in contrast to all rigid, structural methods, which deteriorate with time, as a living bio-engineering method, Vetiver grass improves its effect with time. It is an environmental friendly method.**



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LANDSLIP CONTROL MECHANISM BY VETIVER

Vetiver
hedgerows

Vetiver
roots

slipping zone on slopes
usually 0~2 m depths



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This drainage line in Fiji has been stabilized with vetiver for more than 30 years. It used to be barren and gullied. Note the color difference between vetiver and native species.



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Hong Kong - Kowloon. Above, vetiver hedgerows and *Acacia mangium* planted on heavily eroded granite surface on hills behind airport. Below, similar site two years after treatment. Photo credit - R.G. Grimshaw.



Degraded hill park in Hong Kong was planted to vetiver and Gmelina trees. The result was startling. Vetiver hedgerows acted as a pioneer system that improved soil moisture by reducing runoff on these steep hillsides. Native species colonized the slope between the hedgerow and the trees grew very well. This is typical of what the Vetiver System will do.



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A common feature in many West African countries is the occurrence of enormous gullies (ravines) that are cutting back into urban areas. In the Congo (DRC) this huge gully was cutting back into the city of Kikwit. With the support of USAID and The Vetiver network a community project was undertaken with the local people reshaping the gully and planting it to vetiver. Top left - a huge gully near Kinshasa, the home owner had planted a little vetiver which gave some protection. Bottom - a panorama view of the reshaped gully. Top center - planted with vetiver. Top right the gully well covered 4 months after planting.



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Five years previously this land was heavily eroded pineapple plantation in Thailand. With the help of vetiver it has been rehabilitated into open parkland. Note in top right how native grasses are growing vigorously in the silt deposit behind the hedgerow where the man in the white shirt is standing



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This bauxite mine tailings in Venezuela were rehabilitated using Vetiver System by a local environmental cooperative. Native species will colonize between the vetiver rows. This is a typical point source site for sediment and toxic leachates that if not for vetiver would end up in down stream drainage



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This orchard land near Santa Barbara, California was sliding down the hill. The engineered system was not working. Vetiver was planted and the slide was halted. The owner rates vetiver at A+++



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This College campus in south China was in need of land rehabilitation. Vetiver System was applied (top right). The two bottom photos show how the landscape has been protected and stabilized and how native plants have colonized the vetiver



Sand dune stabilization in Vietnam using Vetiver



Trial of Vetiver grass for protecting sand dunes in Quang Binh. Establishment of the demo site.



The sand dune is fully stabilized after one year, favoring the growth of other trees.



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A degraded slope in Vietnam. Before treatment (left), two years later (right)



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Slopes like this (left) on the Ho Chi Minh highway can be stabilized successfully with Vetiver (right). If the slope on the left is not stabilized it will slide. This is typical of land slides that occur after steep slopes have been cultivated. Vetiver can be used to protect and stop future slides



Land Rehabilitation in Madagascar

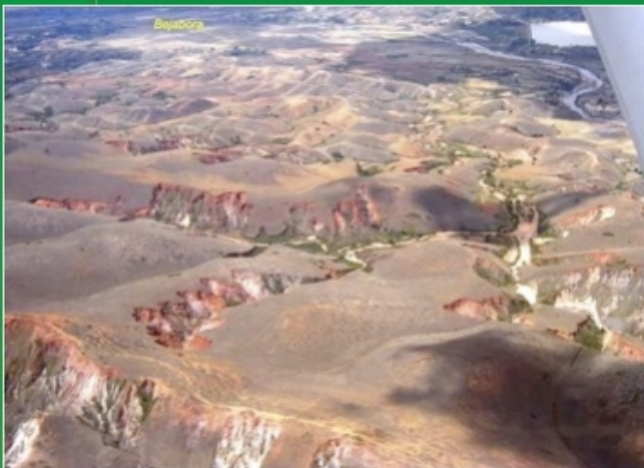


These terraces are established only by VS action, planted few years ago for vegetable culture

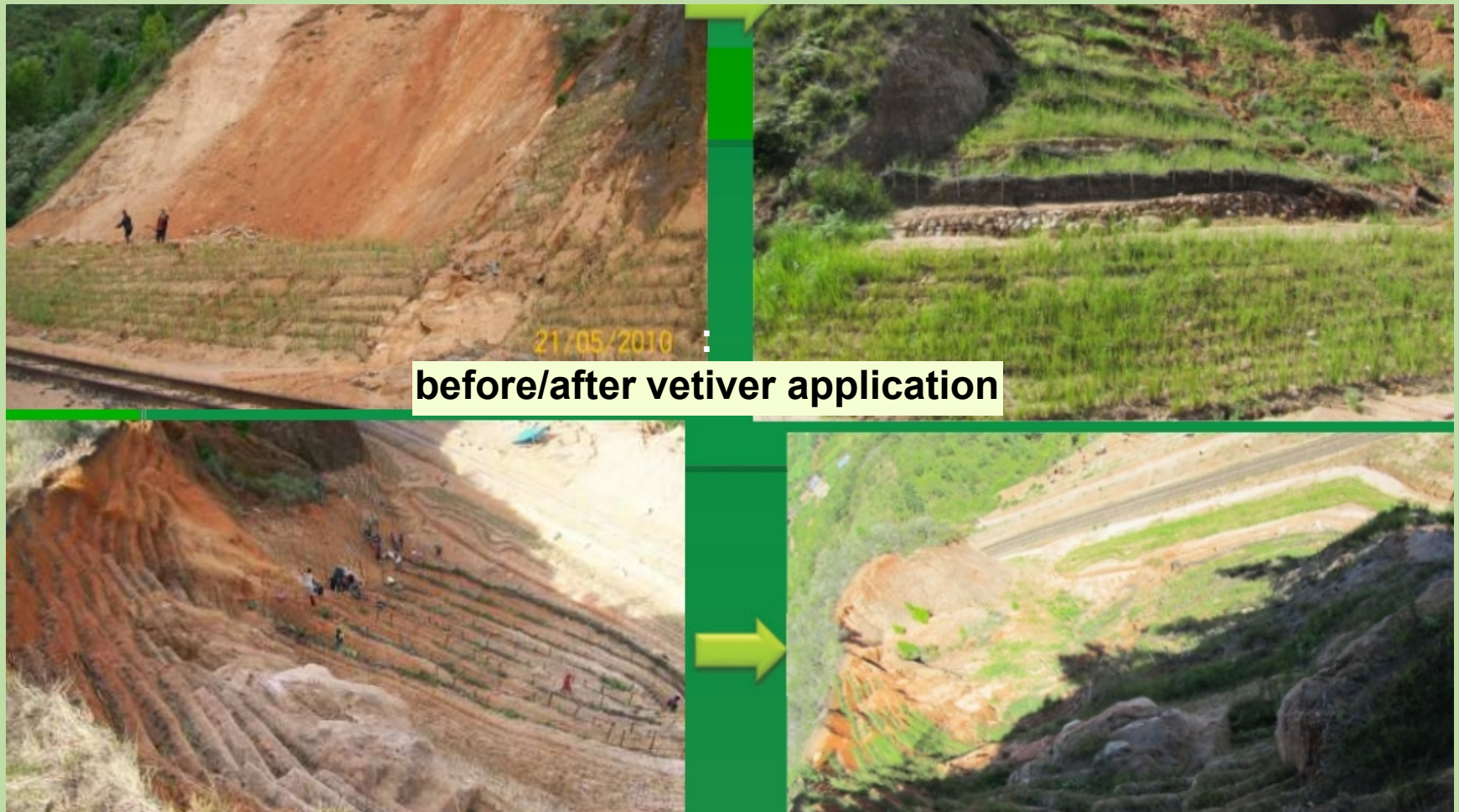
Results: sustainable agriculture with better fertility and moisture, mulching, no soil loss



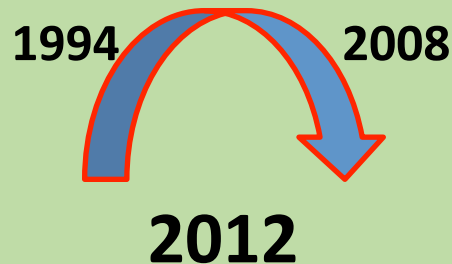
Erosion, gully erosion (lavaka) and sediments due to lack of protection in Madagascar.



Vetiver System Application for infrastructure stabilization (railway)

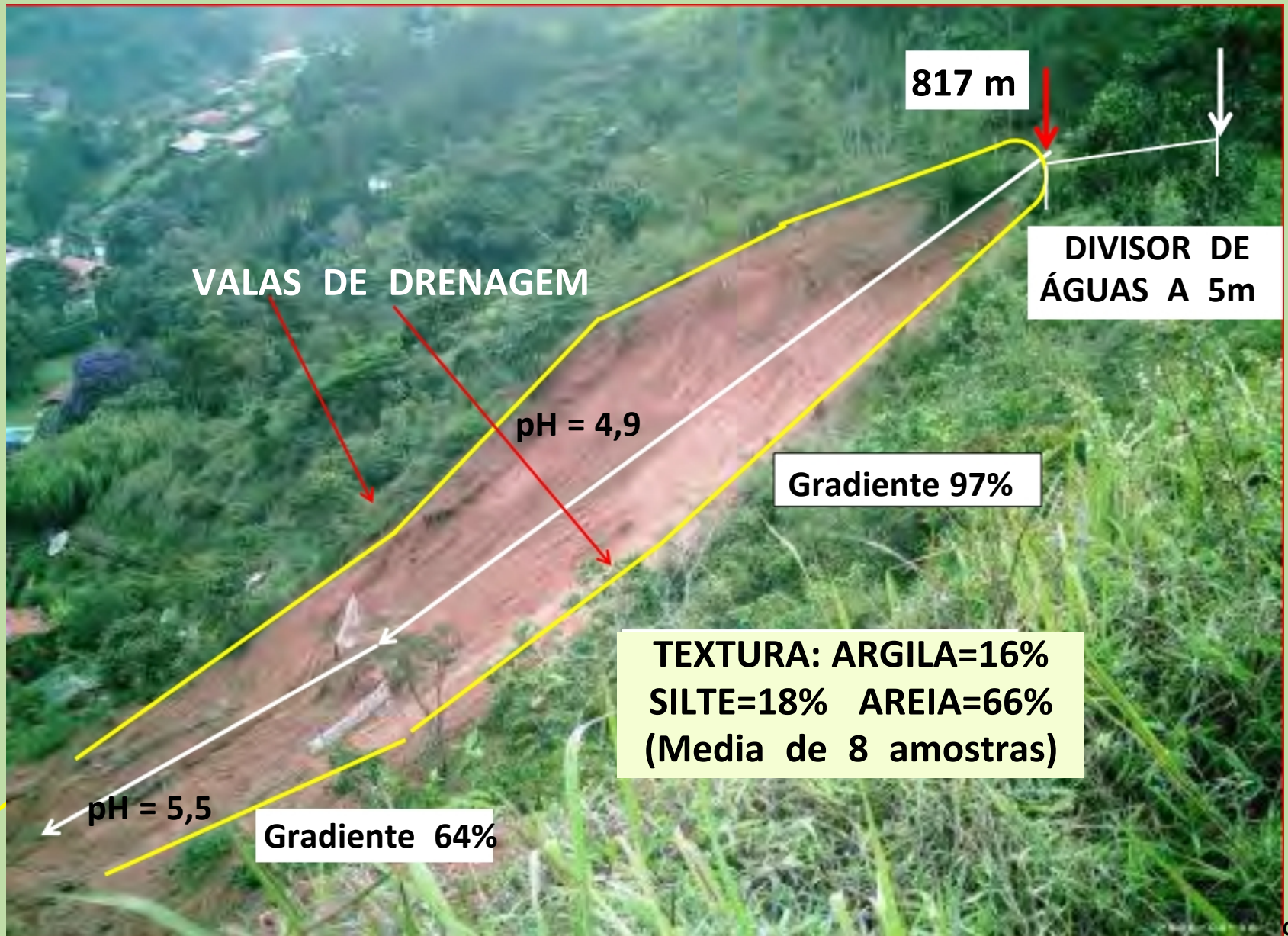


Major landslide rehabilitation in Brazil



SITE CHARACTER--- 1994







Completed and stable slide slope



Restored, safe and revegetated thanks to Vetiver System



SOIL CONSERVATION AND EROSION CONTROL PRACTICES IN ETHIOPIA BY SLUF (SUSTAINABLE LAND USE FORUM)

The Average precipitation (mm/year) in Ethiopia was 848 in 2009, according to a World Bank report, published in 2010.



Rangeland Rehabilitation & Improvement - Ethiopia



Rangeland Rehabilitation & Improvement



2004



October 2005

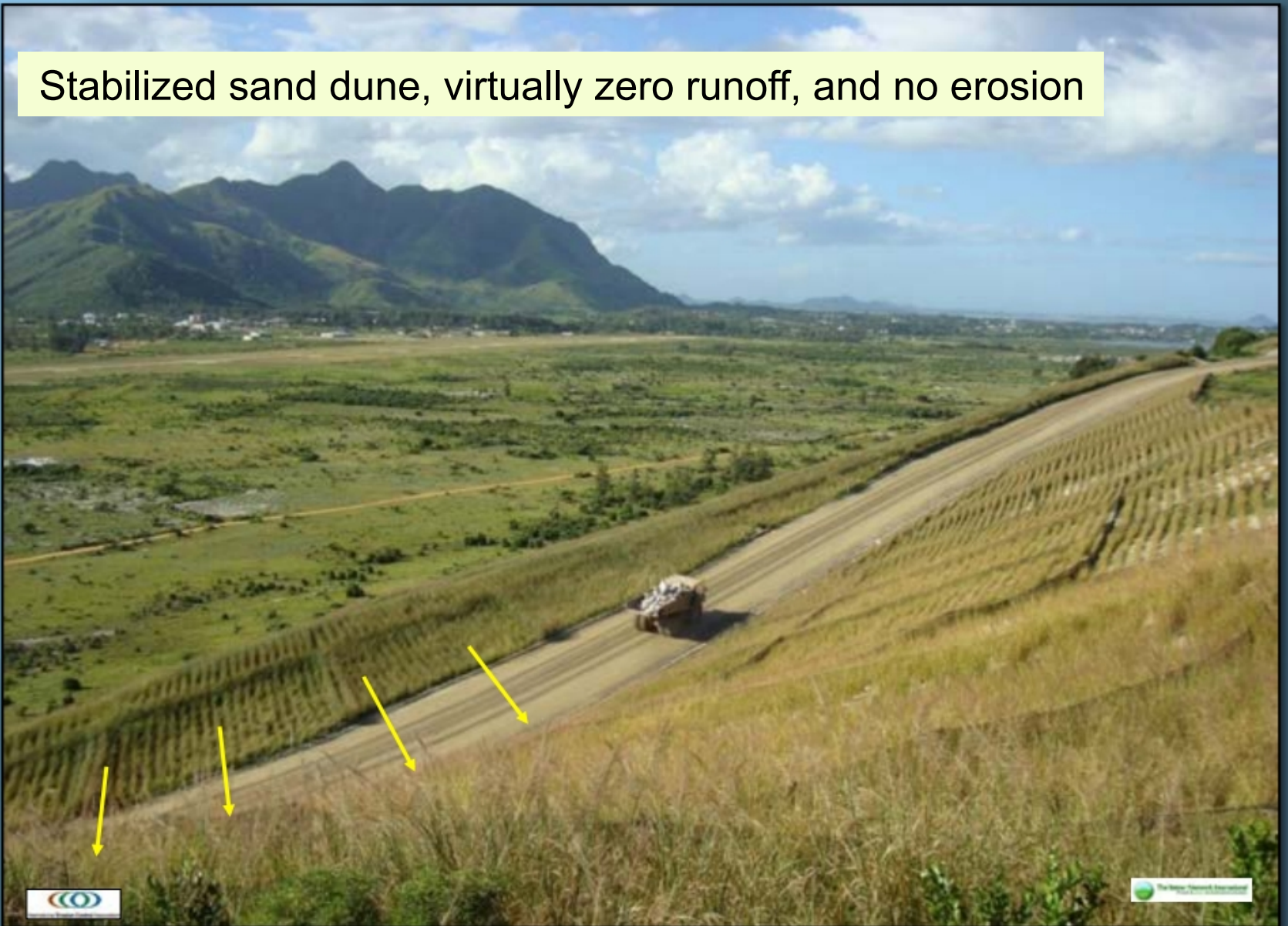


Madagascar sand dune stabilization Planting vetiver hedgerows.



Madagascar sand dune

Stabilized sand dune, virtually zero runoff, and no erosion



Gully rehabilitation under arid conditions in South Africa



Moutse Village Gully Rehabilitation – April 2013





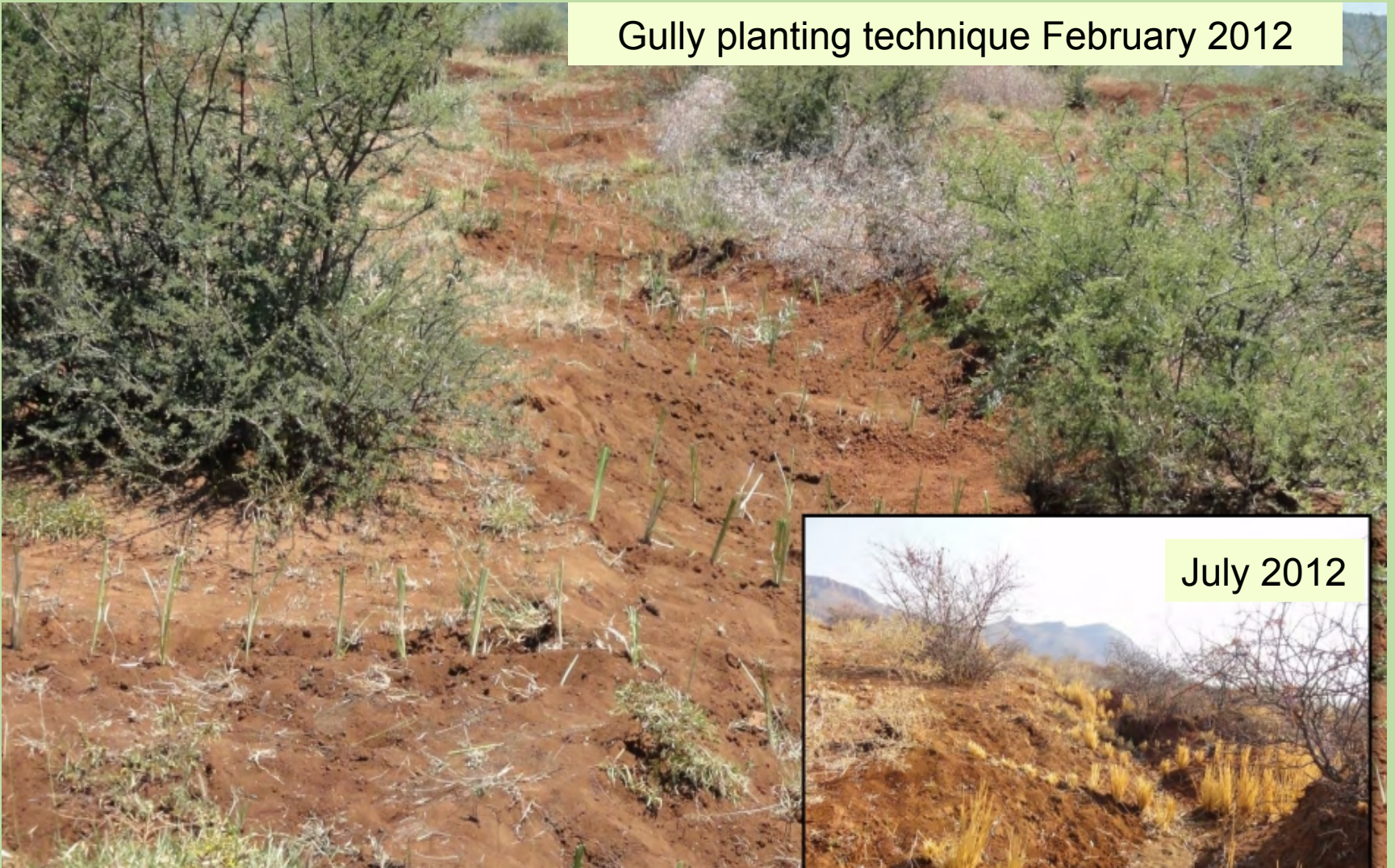
In-Field Training on soil conservation techniques on degraded area in Tubatse, Limpopo Province, RSA



Established Vetiver plants grazed by domestic animals – May 2013



Gully planting technique February 2012



July 2012

