

# APPLICATIONS OF VETIVER SYSTEM TECHNOLOGY FOR LAKE SHORE PROTECTION IN BRAZIL



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# **INTRODUCTION**

**Following successful applications of the Vetiver System Technology (VST) by Deflor Bioengenharia for various erosion control and revegetation of degraded areas, associated with infrastructure protection and mining. VST applications have been well accepted in Brazil.**

**Erosion of water retaining structures such as lake are more complicated than hillside slopes stabilization; resulting from interactions between hydraulic forces acting at the bed and toe and gravitational forces affecting the in-situ bank material. Failure occurs when erosion of the bank toe and the channel bed adjacent to the bank have increased the height and angle of the bank to the point that gravitational forces exceed the shear strength of the bank material.**

**Non-fluvial controlled mechanisms of bank retreat include the effects of wave wash, trampling, and piping- and sapping-type failures, associated with stratified banks and adverse groundwater conditions**

**Although gravity is the main driving force, it cannot act alone. Slope angle, angle of repose of specific soil, climate, slope material, and especially water, contribute to its effect:**

- In the form of rivers and wave action, water erodes the base of slopes, removing support, which increases driving forces.**
- Water also increases the driving force by loading, that is, filling previously empty pore spaces and fractures, which adds to the total mass subjected to gravitational force.**
- Water's interaction with surface rock and soil (chemical weathering) slowly weakens slope material, and reduces its shear strength. This interaction reduces resisting forces.**

# The following is a case study of a lake shore protection project in Brazil.



**Baren lake shore exposed to wind water erosion er planting**



**Site preparation for Vetiver planting**



**Site preparation for Vetiver planting**



**Potted Vetiver planting slips**



**Vetiver planting at 2m interval**



**Six months after planting,**



**Vetiver was inundated after heavy  
rain overflow**



**Six months after planting**



**Vetiver was inundated after heavy rain overflow**





**Growth recovered after heavy rain overflow receded**



**Growth recovered after heavy rain overflow receded**



**THANK YOU**

**Growth recovered after heavy rain overflow receded**