

## Motive in favor for VGT to be an ideal Plant

The major advantage of VGT is its low cost.

It provides a natural and environment friendly method of erosion control and land stabilization which 'softens' the harsh look often associated with conventional engineering measures such as concrete and rock structures.

VGT's maintenance costs are low in the long term. It has ability to regrow very quickly after being affected by drought, salt and other adverse soil conditions when the adverse effects are removed.

In addition, vetiver grass has "NO WEED POTENTIAL", due to the fact that it has no above or underground runners, and although it flowers it does not set seeds (similar to sugarcane). It poses no threat to the environment and other vegetation, both native and/or introduced species as it's a sterile grass.

Maintains aesthetic value.

### Other applications for Vetiver Grass

- Thatching roofs
- Bridge protection
- Clean water from agricultural and farming
- Operations
- Nurtures trees
- Stabilizes tree crop



## Ministry of Waterways & Environment

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## Ministry of Waterways & Environment

# VETIVER



## A THIN GREEN LINE

AGAINST EROSION  
RIVER BANK STABILIZATION





## Bank Erosion

Bank erosion is a natural process as rivers meander across floodplains. This however, is exacerbated through catchment development, stream regulation, removal of large wood, livestock management and clearing of riparian vegetation, which greatly increase the rate of bank erosion, more often to unacceptable levels. Bank erosion accelerated through human impact.

Following extensive river bank erosion nowadays in Fiji, the Ministry aims to assess river bank stability and erosion and map out long term strategic plan. There are two protecting ways to do that:

- Ecological measures- using of plants
- Engineering measures- by means of engineering structures like gabion box, groins and retaining walls.

## Causes

The major causes of river bank erosion in Fiji are flooding, unsustainable land use, stream management, over-clearing of catchment and stream bank vegetation, and poorly managed sand and gravel extraction.

## Protective Measures

The use of vegetation as a bio-engineering tool for bank protection can be a less expensive measure. A prime candidate for use as bank protection is vetiver grass.

## Vetiver Grass Technology (VGT)–A Hedge Against Erosion

Vetiver grass was introduced to Fiji over 100 years ago and it has been widely used for soil and water conservation purposes for more than 50 years. Locally, known as Ghatra the Vetiver grass has distinctive morphological, physiological and ecological characteristics. Together with its tolerance to highly adverse growing conditions provide a unique bio-engineering tool for land stabilization, flood and stream bank erosion control. The VGT also has been successful stream bank and riverbank stabilization carried out in Malaysia, the Philippines and Australia. In Fiji research was carried out in Waibau, Naitasiri from 1987-2000. This project was initiated by Land Use Planning Section in collaboration with IBSRAM.

## What Makes Vetiver Grass Ideal

- Extremely deep, massive and finely structured root system capable of reaching down to two to three meters in the first year.
- Stiff and erect stems, which can stand up to relatively deep-water flow (0.6-0.8m).
- Clump grass with sterile seeds and cannot become a weed.
- Improves soil fertility and water quality and survives long periods of drought and submersion in water for over 50 days.
- Forms a dense, permanent hedge preventing soil loss from runoff; grows in most soils types irrespective of nutrient status, pH, acid sulphate, salinity, etc.
- It is perennial and permanent and only grows where we plant it.

## Vetiver Grass as Bank Protection Against Flood

The incorporation of vetiver hedges as an alternative to strip cropping could be used to protect river bank.

The blending of both deep root system and thick growth of the vetiver hedges helps protect the banks of rivers and streams under flood conditions. Its deep roots prevent it from being washed away while its thick top growth reduces flow velocity and its erosive power. This method could be useful for both smaller and larger rivers/streams.

Planting it both horizontally and at right angles to the flow direction will minimize the impact of the high velocity flood flow. It could be also planted in rows both horizontally and diagonally to stabilize the bank by its deep root system and to reduce the high flow velocity by its top growth.

Vetiver can provide excellent protection against flood movements up to 3m deep if planted both upstream and downstream.

In expertise to application on engineering drawings and specifications it could be imbedded at:

**Rows:** 300mm apart

**Planting:** 350mm distance

**Root depth:** 80 to 120mm to have an immediate impact on river bank erosion.

