

Vetiver System - A Green Investment for Sustainable Development and Disaster Mitigation.

An Overview



THE VETIVER NETWORK (INTERNATIONAL)

THE VETIVER SYSTEM

A “green” technology that is low cost, easy to use, and it works

Used for:

Soil and Water Conservation
Infrastructure Stabilization
Flood Control
Water Quality Improvement
Pollution Control
Land Rehabilitation
Disaster Mitigation
Handicrafts
Many other uses



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THE PLANT

Vetiveria zizanioides



Australia - Queensland



Malaysia - close up
Clump grass



Costa Rica



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THE ROOT



**China - excavated root.
Average tensile root
strength 75 MPa**



**Malaysia - longitudinal section through hedge
note the root mass in the top meter of the soil
profile. This type of root mass will improve
soil shear strength by up to 39%**



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THE VETIVER GRASS SPECIAL CHARACTERISTICS

Grows under extreme and wide range of conditions:

Long Living Perennial Grass

Air temperatures: -14 ° C to >55° C

Soil pH from <3 to >10

Annual Rainfall 300 mm to > 5,000 mm

Tolerant to all heavy metals

Saline tolerant

Fire tolerant

Few Pests and diseases

Powerful (75 MPa root strength) and deep root system

Non competitive and non invasive



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THE VETIVER GRASS TECHNOLOGY

The basic technology comprises a hedgerow of vetiver grass planted on the contour



Malaysia - 30 month hedgerow planted on the contour

Malaysia - close up hedge cross section



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PROPAGATION

Vetiver grass cultivars originally from South India are sterile and non invasive. It is these types that are used for the Vetiver System.

Vetiver is propagated by root division. If large quantities of plant material is required nurseries have to be established.



**China - 20 ha nursery
- bare rooted plants**



**Malaysia - containerized vetiver
nursery**



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PLANTING



Mexico - Planting by hand



India - Preparing planting material



**Australia -
machine planting.
Modified
vegetable planter**



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VETIVER SYSTEMS FOR SOIL AND WATER CONSERVATION



**Columbia - CIAT vetiver
- cassava trial on
a steep slope**



**Malawi - erosion control
on maize field**

**El Salvador
- hillside
conservation**



**Costa Rica - vetiver
used to protect
tobacco crop**

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VETIVER SYSTEMS FOR SOIL AND WATER CONSERVATION



Panama - vetiver hedge on a steep slope in Chiriqui. Prior to vetiver these fields were subject to serious land slip



Madagascar - sediment from cropped field filtered out by vetiver hedgerow. Eventually natural and stable terraces will be formed behind the hedgerow



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VETIVER SYSTEMS FOR SOIL AND WATER CONSERVATION



Thailand -
vegetable
crops in the
highlands
protected
by vetiver



China - VS for wind erosion
control

Congo (DRC) - a reshaped urban
gully about to be stabilized with
vetiver grass



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VETIVER SYSTEMS FOR INFRASTRUCTURE STABILIZATION



Vietnam - Ho Chi Minh Highway - with and without vetiver



**Vietnam - Ho Chi Minh Highway
Completely stable and cyclone proof**



VETIVER SYSTEMS FOR RIVER BANK, POND AND IRRIGATION CHANNEL PROTECTION



Thailand - fresh and salt water fish and prawn ponds are protected with Vetiver



Vietnam - Vetiver stabilizes this irrigation canal



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VETIVER SYSTEMS FOR FLOOD CONTROL



**Australia - even on flat land there can be serious erosion.
- a long vetiver hedgerow protects a field from flood damage.**



Vietnam - forty provinces are now using vetiver to stabilize sea dykes against cyclone created storm damage



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VETIVER SYSTEMS FOR LAND REHABILITATION



Venezuela - rehabilitation of bauxite mine using Vetiver Systems - reducing the flow of heavy metals from entering surface water supply



Australia - gold mine slimes dam protected by vetiver, preventing wind blown cyanide soil particles



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VETIVER SYSTEM FOR POLLUTION CONTROL

With high capacity of removing N and P in polluted water, vetiver cleaned up blue green algae in 4 days



Same effluent after 4 days with vetiver reducing N to 6mg/L (94%) and P to 1mg/L (90%)

Sewage effluent infested with B-G algae due to high N = 100mg/L and P = 10mg/L

Vetiver was grown in the left hand beaker.
After 4 days it reduced nitrates by 94% and Phosphates by 90%.

On a piggery effluent pond in Vietnam



In Vietnam and China floating rafts of vetiver have been used to help clean piggery effluent ponds

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VETIVER SYSTEM FOR DISASTER MITIGATION

Disasters caused by flooding create havoc for communities, and most often results in loss of life and income. The Vetiver System can prevent such disasters and also help stabilize landscapes and infrastructure after disasters.

Vetiver System is particularly good in reducing landslides, highway collapse, building collapse, river levee breaching, and other damage due to heavy rains and flood.



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VETIVER SYTSTEM FOR LANDSCAPING



Vetiver was used to stabilize and reduce pollution on this hotel beach front in Senegal and to create a basis for landscaping. Top left: before
Bottom left: six months after planting vetiver grass



India: coastal stabilization



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VETIVER SYSTEM FOR OTHER USES



Handicrafts
Building materials
Medicinal
Fuel
Ethanol
Aromatic oil
Water purification
Paper
Mulch
Insect Control
Forage



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Web site:

<http://www.vetiver.org/>

Blog Site:

<http://vetivernetinternational.blogspot.com>

Photo Gallery:

<http://picasaweb.google.com/VetiverNetwork>

Vetiver Client Gallery:

<http://picasaweb.google.com/VetiverClients>



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