

VETIVER

&

THE VETIVER SYSTEM

INFORMATION ON A
LOW-COST TECHNOLOGY

FOR

EROSION CONTROL
DISASTER MITIGATION
&
FARM APPLICATIONS

GREEN POST-TSUNAMI
ACTION

with courtesy to
THE VETIVER NETWORK
INTERNATIONAL

April 2008



VETIVER is a grass that occurs naturally in South India. The scientific name is *Chrysopogon zizanioides*, but let's call this very unique tropical plant simply **vetiver** – as we all know it.

Some of us may remember from our youth the nice scent of vetiver that perfumed the drinking water at home or in school..... and the fans and mats made of vetiver roots, which, sprinkled with water, gave such a refreshing air on hot days.....

What happened to this plant that was used for so many other purposes too like animal fodder, medicine, erosion control, etc.? Unfortunately it was somewhat forgotten in South India. But now there is a trend to bring it back and to promote it as the "**Vetiver System**". It is already used in more than 120 countries. The "**Vetiver System**" is a simple hedge

or barrier of upright, dense and deep-rooted clump grass that slows run-off, allows sediment to stay on site and form terraces in the long run.

The Vetiver Network International plays an important role in the promotion campaign; have a look at their website:

www.vetiver.org



Vetiver, the grass.

As can be seen on the photo, vetiver has some special features:

- A massive, finely structured root system that can reach 3 – 4 m depth in a year and a clump of stiff and erect stems. This makes the grass very drought tolerant and in the same time difficult to be washed away by strong currents or waves. It is thus quite suitable to be incorporated in protective barriers against tsunamis and cyclones.

- Vetiver grows in clumps and has no rhizomes like some other grasses, which makes it easy to control.

And also:

- It is highly resistant to pests, diseases and fire. The latter because its 'crown' is below ground and regenerates well after fire.
- Vetiver is fast growing and thrives in dry as well as flooded conditions and in temperatures from - 14°C to + 55°C (optimal 25°C). It is tolerant to soil pH ranging from 3.3 to 12.5 and to acidic, alkaline, saline and sodic soils.

All in all: it is a very hardy, non-invasive grass.....

There are however two things that vetiver cannot withstand: shading of more than 60% and the pesticide 'Roundup'.

The vetiver cultivars from South India, such as Monto, Sunshine, Karnataka, Madupattu, etc. flower but produce sterile seeds. This, and the fact that the grass has no rhizomes, makes it non-aggressive, non-invasive and easy to control. When well taken care of, it will not

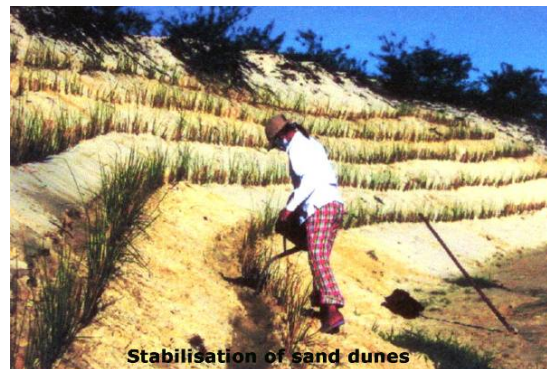
become a weed (as for example *Cyperus rotundus* or nut grass)



Vetiver around farm ponds

Using vetiver on common land and in the farm.

The applications of vetiver are many: in the first place it **controls erosion** along **roads, water ways and bunds of farm and shrimp ponds**. The roots of the grass are stronger and more effective than the roots of many trees.

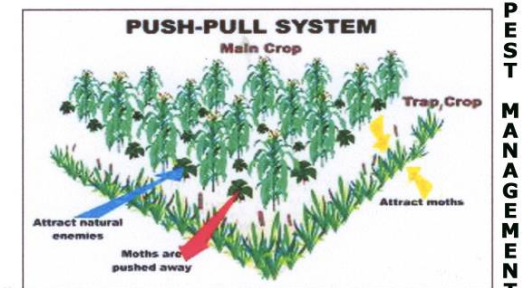


Stabilisation of sand dunes

Because of its deep roots, the grass is also very useful to **stabilise sand dunes**. The roots foster the (re-) establishment of other plants, indigenous to sand dunes through soil improvement.

Planted near **wells**, it keeps them **clean**. The vetiver roots can absorb many impurities, even heavy metals. Initially the plants need water to establish, but when they have reached maturity after 6-9 months, they will increase the water level in the well by **drawing up water from deeper levels** with their long roots.

Solid and liquid waste can be treated successfully by planting vetiver.



The Push-Pull system: Vetiver attracts the insect to lay eggs where they have little chance of survival.

Vetiver can also be used in **crop protection**. It acts as a trap-crop: insects are attracted to it but their offspring cannot survive on it and dies. The grass is thus a very good defence

line around an organic (vegetable) garden.

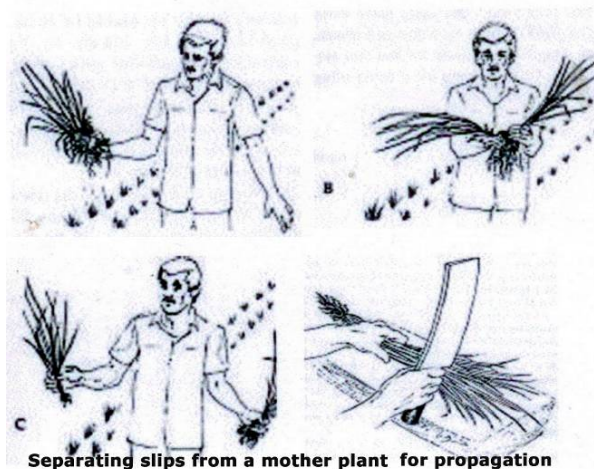
The young leaves can be used as **fodder** for cattle. Roots and leaves are used in making **handicrafts**. Vetiver that is planted to control erosion and mitigate disasters like tsunamis, should however not be used extensively for the purpose of handicraft or **medicine preparation**, since this need digging up the roots and thus creating holes Vetiver for handicraft and medicinal purpose can also be cultivated in woven plastic (cement) bags, which avoids putting in a lot of energy to dig the roots up.



Propagation of vetiver

The most common way to propagate vetiver is by carefully splitting

mature tillers from a vetiver clump or mother plant. These 'bare-root slips', which each consist of 2 – 3 tillers and a part of the crown, can immediately be planted or propagated in poly bags.



Tissue culture is also done for multiplication on a large scale.

Vetiver slips of deep-rooting, well producing cultivars can be obtained through Green Post-Tsunami Action or from (cost in April 2008: Rs. per slip). When the plants from these slips are well established after 6 months to one year, new slips can be separated from selected mother plants for further plantation.

Planting vetiver.

Vetiver is usually planted in hedgerows, called the Vetiver System, and needs 3 – 4 months to establish (5 – 6 months under harsh conditions). It is fully effective after 9 – 10 months. Planting should be done at the beginning of the rainy season (for Tamil Nadu this is in October) and the plants need care at planting and in the first few months.

The bare-root slips are dipped in manure slurry and kept in a shallow pool till new roots appear and the slips are ready for planting.

A rooting hormone can be prepared by filling a 20 litre plastic bag with water hyacinth, close it airtight and keep it for one month. The remaining liquid is strained and sprayed on the slips in a 10% dilution. After 24 hours the slips are dipped in manure slurry and planted



Preparing slips for planting: dip in manure slurry

The planting distance of bare-root slips is usually 10 – 15 cm. A handful of (vermi-) compost in the planting hole gives the slips a good head start.

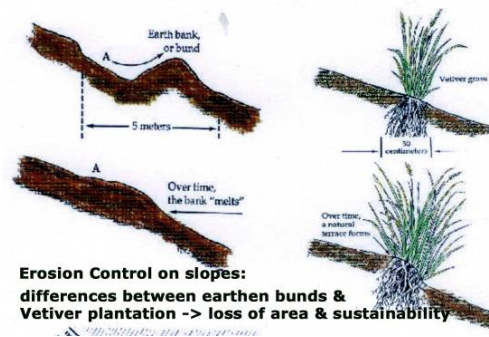
Under dry conditions daily watering during the first two weeks is necessary (e.g. in the case of sand dune stabilisation). Twice weekly watering is advised until the plants are established. Mature plants need no watering.

In the first few months the grass should be protected from cattle, which like to browse the young shoots.

After 5 – 6 months regular trimming of the hedgerows is important: to promote the growth of new tillers from the base and reduce the volume of dry leaves that can overshadow young shoots.

Vetiver / the Vetiver System is a versatile and low-cost technology (since it is labour intensive its cost is related to the local labour cost) that can be effectively incorporated in rural and community development plans. The information on the system is free and can be obtained from, among other sources, www.vetiver.org and the below mentioned manual, which is available

for reference in GPTA and with Ekoventure.



Ref. Vetiver Systems Applications, Proven & Green Environmental Solutions; by Paul Truong, Tran Tan Van, Elise Pinner; The Vetiver Network International 2008.



GREEN POST-TSUNAMI ACTION

Is a tsunami rehabilitation & development project in 60 villages in four coastal districts in Tamil Nadu: Thiruvallur, Kanchipuram, Villupuram and Cuddalore. The project is funded by the **EUROPEAN COMMISSION** and implemented by three partners:

HUMANA PEOPLE TO PEOPLE INDIA, the lead organisation, **EKOVENTURE**, the local partner and **PRACTICA FOUNDATION**, the advising partner from The Netherlands.

The project covers four areas of activities: Water, Sanitation, Protective Environments and Food Security.

This leaflet was prepared in the frame work of the component Protective Environments, which is linked to the other three components as well.

GPTA thanks **The Vetiver Network International** for the use of their sources and information.

GREEN POST-TSUNAMI ACTION

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