



CHINA VETIVER NETWORK:

**20 YEARS EXPERIENCE IN
VETIVER DEVELOPMENT**

1. THE INITIATION OF VETIVER SYSTEM IN CHINA

**Introduced into China by Mr. Dick Grimshaw in 1988
through World Bank project**



Tests showed that vetiver could play an important role in the remediation of red soils, riverbank and coastal land stabilization

Farmers used vetiver to

- protect tea bushes and tea oil plants.**
- feed animals and fish with vetiver pruning.**
- fix coastal sand dunes, control wind erosion,**
- establish hedges as windbreaks.**

Research also has shown:

- ☐ increased soil fertility with soil nutrients such as N P K**
- ☐ improved soil pH and organic matter content**
- ☐ reduced water runoff and water erosion**
- ☐ when used to mulch ground surface
soil temperature and moisture were improved**

**National Vetiver Planting Technology Workshop by
Agriculture and Water Resource Ministry**

in Shaowu of Fujian Province 1989



Participants:

5 project provinces:

- **Jiangxi Province,**
- **Fujian Province,**
- **Hunan Province,**
- **Sichuan Province,**
- **Guizhou Province.**

In addition, participants also came from:

- **Chinese Academy of Sciences,**
- **International Science Union,**
- **Agriculture Ministry,**
- **Water Resource Ministry ,**
- **Forestry Ministry.**

- ✓ **exchanged vetiver planting technology and experience;**
- ✓ **reviewed vetiver application situation and prospective in other countries**
- ✓ **visited vetiver demonstration plots and nurseries**

Proposed further steps for vetiver applications:

- ❖ reinforcing vetiver tests and demonstrations;**
- ❖ getting preparation for extension;**
- ❖ strengthening mobilization and raising
recognition on the function of vetiver grass
for erosion control and agriculture production;**
- ❖ establishing national vetiver information network.**

After the workshop, numerous universities and research institutes involved in vetiver tests on:

- vetiver's biological and ecological characteristics;**
- establishment and management of vetiver hedges;**
- effect of vetiver on soil fertility, soil moisture, soil erosion control, and crop yield.**

Difference between vetiver and tree



Feed goat



Mushroom cultivation



2. VETIVER BASED AGROFORESTRY PROJECTS FOR POVERTY REDUCTION AND RESOURCE PROTECTION

Vetiver based agroforestry projects launched in recent years

| Project name | Period | Main project contents |
|--|------------------|---|
| China Vetiver and Agroforestry Technology Project | 2001-2003 | 1) 16,000 chestnut trees 400,000 mulberry trees, and 8,000,000 tea plants protected by vetiver hedges 2) introduce vetiver and agroforestry 3) 5 pumping stations 4) develop multiple training courses 5) extend |
| Vetiver for Sustainable Watershed Management | 2004 | 1) chestnut 2) tea trees 3) vetiver 4) training |
| Poverty Reduction and Resource Protection in a Guangxi Province Minority Area | 2007-2008 | 1) 54 000 economic trees (loquat, pear, peach, plum, waxberry) be planted 2) 3 210 000 vetiver tillers 3) 40 sets of irrigation system be constructed in two minority mountain villages |

Comprehensive investigation in 10 counties since 1995

-- -- From nature to social



A lot of farmers' families were visited



Contents of multiple trainings

Vetiver Technology

- why vetiver can conserve soil and water**
- how to plant & manage vetiver hedges**
- establishment and management of vetiver nurseries**
- use of pruning (fodder, mulch, mushroom cultivation)**

Technical trainings:

Soil-water conservation

- soil and water loss and its consequence
- engineering measures for erosion control
- function of vetiver living hedges
- agroforestry
 contour-planting,
 N-fixing trees and grass,
 plant diversity

Technical trainings:

Fertilizers

- **vetiver pruning as green manure**
- **technique of increasing soil fertility**
- **combined use of farmyard manure
and chemical fertilizer**

Technical trainings:

Economic tree cultivation

- seedling cultivation and management**
- planting & management of different economic trees**
- vetiver hedge establishment for economic tree production**
- pests and diseases control**

Hand to hand training for farmers in the Dabie Mountains



Lecture presentation by vetiver expert



On site training and instruction



Lecture on the use of vetiver for economic tree protection



Wide distribution of vetiver printed matters to women



Tea cultivation training



Soil erosion in the Dabie Mountains



**Farmers use dead plants against erosion,
but it can not last long time**



Tea trees were protected by vetiver grass in just 3 months



Chestnut tree protected by vetiver





Vetiver protected tea trees in the Dabie Mountain

3. VETIVER HANDICRAFT TRAINING

Why handicraft:

- Increase farmers income;**
- Plant more vetiver for erosion control;**
- Uses of vetiver leave during engineering applications**

The course was well prepared:

Color Newsletter was prepared to introduce vetiver handicraft to local farmers to let farmers know vetiver handicraft and generate their interest in participating

Local project partners were asked to get preparation for the training:

selection of training location and trainees;

preparation of handicraft materials and tools.

Field survey was investigated in Jiangxi Province to prepare vetiver leaves to transport to Guangxi.

Uses of handicrafts

- Different things for farmers family use.**
- Products to fill fruits for selling
(combine handicrafts with fruits production & marketing).**
- Hats, bags, containers, etc. for selling to tourists.**

Most successful--- came from:

Leading Group established consisted of many important people from multiple parties. Each person had its detailed responsibility. Everything was planned and arranged very clearly and implemented smoothly.

Around 10 key persons from various institutions actively involved in the organization and in-course service, of which 4 from China Vetiver Network worked at the training site.

Both trainers and trainees all worked very hard. Trainees learnt very earnestly, while trainers taught very patiently.

Logistics people did a very good job to guarantee the implementation efficiently. Our guests, the three trainers were very happy with logistics arrangement.

Thai trainers brought China many tools that might be difficult to found in China in a short time and enabled the training course implemented smoothly.

23 trainees were selected.

The opening



Poster exhibition



Select leaves



Preparation for dyeing



Dyeing leaves



Dry leaves



Separate leaves with needle



Start handicraft





Professors participate

Teach and study very carefully





First handicraft finished



Further practice



The old woman (right) saying: If I were younger!



Learn to make mat



独生

2007 11 4



烛
生

2007 11 2

The closing ceremony



Awards released



Dancing after closing ceremony



See you later!



4 VETIVER SYSTEM FOR ENGINEERING PURPOSE

4.1 Initiation of vetiver systems application for highway embankment protection

VS for highway and paddy field protection-- 1997



Diti Hengchaovanich introduced his expertise during International Vetiver Workshop in Fuzhou

19-24 October 1997



On 8 July 1998

Official document released by Highway Bureau of Fujian Province.

- Approved utilization of vetiver for stabilizing highway embankments**
- Asked all highway institutions, offices, and departments in the province to study vetiver technologies**
- Requested all institutions strengthen exchange of ideas and experiences to extend VS more rapidly.**

October 1999

**International Conference on
Vetiver Bio-Engineering Technology for Erosion
and Sediment Control and Civil Construction Stabilization**

**by China Vetiver Network and
The Highway Administrative Bureau of Jiangxi Province**

The conference was a **breakthrough** for
highway and infrastructure protection.

Both foreign and Chinese experts were invited to present lectures.

Participants were engineers.

Why breakthrough ?

- 1) Demonstration showed that Vetiver could be widely used for highway embankment stabilization and could reduce costs.**
- 2) Transferred VS applications from previous decade's focus on use for agriculture purposes to engineering applications.**
- 3) VS was fully approved by provincial and national highway experts.**
- 4) The demonstration and project received a third award from National Highway Society in 2002.**
- 5) Generated interest among private individuals**

In Zhejiang Province:

Demonstration was established in **2000** on the newly constructed **National Highway No. 330** on **10,600 m²** of slopes to prevent the frequent landslides.

Appraisal conference on vetiver in **November 2000** by **Zhejiang Communication Bureau**

- the first conference of this kind in China.
- Provincial and national experts attended the conference and toured the demonstrations.
- Vetiver Systems were fully approved and thus disseminated throughout the province and the country as well.



Official documents released by highway authorities — Highway Door Open

Introducing vetiver to engineers (Xiamen 1998)



Vetiver can fully protect the slopes in just 100 days since planting





National Highway 312



各 K52 香根草生态边坡防护

杭州固绿交通工程有限公司
二零零七年七月

4.2 Vetiver systems for railway embankment protection

**No railway institution was allowed to start
vetiver planting until they received permission
from the top railway authorities**

4 years later since Fuzhou Conf: Railway

Xinchang Railway Company located in Nanjing, the capital of Jiangsu Province, became the first railway to establish a demonstration on newly constructed railway embankment on fluvial plain in spring 2001



New railway in constructions



Farmers contract railway protection



July 2001

5 years later in **2007** vetiver still works well





Cushion produced by local farmers



Cushion on bed even in summer

Autumn:

**Railway Vetiver Technology Identification
and Evaluation Conference of China
was held in Nanjing from 18-20 October 2001**



In 2002 national railway released an official regulation which put vetiver as a effective plant for railway embankment protection and greenization.

The regulation was published in 2003

-- Railway door opened



铁路路基边坡绿色防护技术
暂行规定

2002-01-22 发布

2003-02-01 实施

2003 武汉

Legal application started

4.3 Vetiver systems for other purposes

Since Nanchang Conference 1999, people used VS for

- river bank protection,**
- civil building protection,**
- polluted water (lakes, pig yard, etc.) treatment,**
- mine tail revegetation in different parts of the country.**

The quarry is to be fully re-vegetated



**Protect buildings on the top of the hill
and opposite to the hill**



Coastal fish pond was protected by vetiver



Vetiver for Han River bank protection



Vetiver for city waste water treatment



Vetiver for huge dam stabilization

The small picture shows (from up left to right): vetiver, dam, rubbish filling land



Vetiver for coast bank protection in Fujian Province



Besides, numerous **researches cover a very wide area, including:**

VS for polluted water treatment (lakes, pig farms, city wasted water)

Draught tolerance of different eco-types of vetiver;

Water tolerance of different eco-types of vetiver;

Insects on vetiver hedges;

Regulation of vetiver for embankment protection;

Study on AM fungi in rhizosphere of vetiver grass;

Salt tolerance research of vetiver;

Vetiver for highway, water power project protection;

Effects soil micro-organ;

Planting in different time.

5. NATIONAL NETWORK FOR FAST DEVELOPMENT

5.1 Network establishment

**In order to disseminate vetiver information to
most potential people as many as possible**

- search institutions and people
who might be most interested in VS**
- collected information on numerous institutions
and personnel involved**
- analysed, and evaluated information**
- most potential people and institutions
were recoded for information dissemination**
- network established, totalling over 1000 units or persons**

- Agriculture,**
- Forestry,**
- Water and soil conservation,**
- Ecology,**
- Environment,**
- Land management,**
- Highways,**
- Railways,**
- Mining, power, and excavation.**

The list also included:

- Universities,**
- Technical schools,**
- Research institutes,**
- Extension stations (centres),**
- Government units.**

5.2 Production and distribution of multiple publications to different people

Multiple publications for different people

- Vetiver Newsletter**
- Vetiver for Water and Soil Conservation: FACT sheet**
- Agroforestry Today**
- Vetiver Research and Development**
- Vetiver Grass: The Hedge against Erosion (green book)**
- Vetiver Grass for Slope Stabilization and Erosion Control**
- Vetiver System and its research and application in China**
- ICV-3 Proceedings**
- Vetiver System: Theory and Practice**
- Vetiver New Year's Greeting Cards**
- Chestnut Tree Cultivation with Vetiver Hedge Protection**
- Tea Tree Cultivation with Vetiver Hedge Protection.**
- Mulberry Tree Cultivation with Vetiver Hedge Protection.**

**Books, Newsletters, FACT Sheets,
brochures, and New Year cards produced for
wide distribution to different people**



5.3 Vetiver systems dissemination via public channels

Wide dissemination by news papers, TVs, and home pages



Dissemination by network

我家的报

羊城晚报

YANGCHENG EVENING NEWS

| 要闻-时评 | 广州新闻 | 广东新闻 | 珠三角新闻 | 今日连线 | 特别报道 | 国内新闻
| 国际新闻 | 体育新闻 | 财经新闻 | 娱乐新闻 | 证券新闻 | 环球视点 | 晚会
| 家庭广角 | 花地-连载 | 读书与出版 | 求是 | 成长 | 今日说法 | 社情民意

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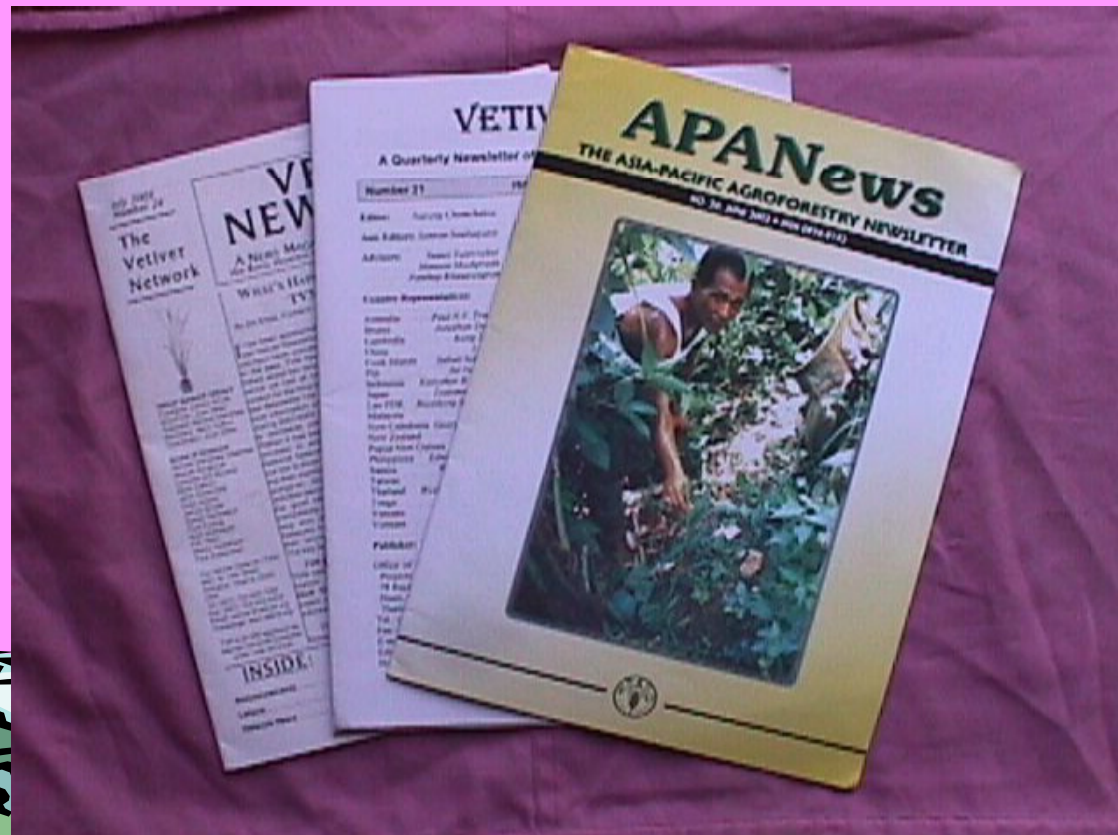
本报讯 记者孙璇、通讯员陈琴琴报道：越来越多的广东高校、科研院所和企业正积极投身于研究、种植一种神奇的草——香根草，并将广东香根草的产业化水平推到全球前列。这是记者从昨天在穗举行的第三届国际香根草大会上获悉的。

这次大会由中科院、广东省政府、泰国 Chaipattana基金会及国际香根草网络共同主办，泰国诗琳通公主、中科院副院长陈竺、广东省副省长宋海等及来自中国、泰

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International journals introduced the Project



Farmers' nursery attracted foreign visitors



5.4 Select a most promising subject

How to select subject

- The most important topic should have huge potential/ market**
- Easy to be implemented compared with other subjects.**
- Play an important role for further extension,
(i.e. once VS was developed in this area it could extend to other field)**
- It could be easily accepted by the related authority.**

5.5 Launch projects in different region

International Vetiver Workshop--Fuzhou, Fujian Province

International Conference on Vetiver Bio-Engineering Technology for Erosion and Sediment Control and Civil Construction Stabilization--Nanchang, Jiangxi Province

Appraisal Conference on Vetiver for Highway Protection --Lishui, Zhejiang Province
Railway Vetiver Technology Identification and Evaluation Conference of China—
Nanjing, Jiangsu Province

Vetiver for economic tree cultivation-- Anhui and Hubei Provinces

ICV-3-- Guangzhou, Guangdong Province

International Vetiver Handicraft Training--Longsheng, Guangxi Province

5.6 Wide cooperation with selflessness

Great Achievements received Awards from China Central Government, Thai King, and international agencies



**Why VS development can last so long time with great achievement
(at least already 20 years)?**

- ❖ The first reason is that the grass has many miracle advantages, which is other plants do not have.**
- ❖ Another important reason is that many outstanding experts actively involve in VS tirelessly and selflessly.**

The tremendous achievement in 20 years in China was reached through joint effort of numerous people from both China and abroad.

Thai engineer Mr Diti went to China to introduced his experience in 1997, 1999, and 2003 respectively.

Besides, he helped me to organize 10 Chinese scientists to visit VS development in northern Thailand on 23-26 Jan 2000.

His work was completely free.

Many others went to China.

**We got support from TVNI experts when we seek projects.
They provided very strong reference letters that insure
our application proposals to be successful.
In VETIVER FAMILY we work together as brothers.**

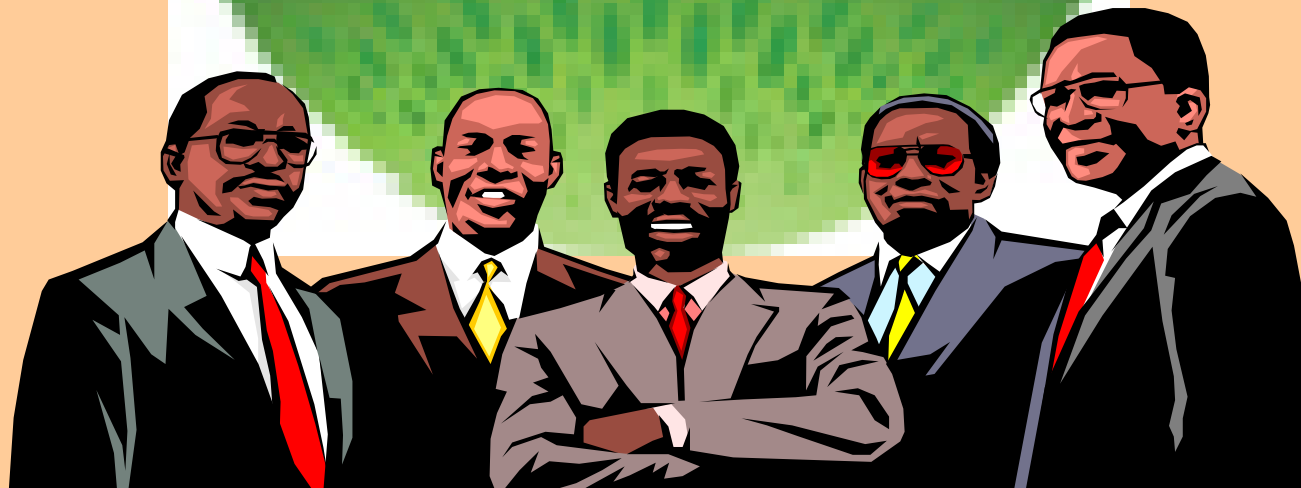
There are many vetiver articles and books published in the recent decades in the world. Many publications were distributed free of charge.

Some of them were translated into other languages without copyright charges, which enable VS to be disseminated more rapidly.

**When we introduce VS for highway protection,
we invited senior highway engineers from different recognized
highway institutions as authors to publish articles in highway journals
in order that more engineers could accept VS,
even though the article was purely prepared by vetiver worker.**

The achievements came from a great deal of effort from numerous scientists, officials, and extension workers from both China and abroad in the VETIVER FAMILY

There will be more progress in China and in the world so long as we FAMILY MEMBERS join together to learn each other and to cooperate more closely



Thank you

