VETIVER SYSTEM
APPLICATION AND EXTENSION
FOR RURAL DEVELOPMENT IN
THE MOUNTAINS OF SOUTHERN
CHINA

Liyu Xu and Biao Huang

China Vetiver Network
1. Introduction: VS development in China
Introduced into China by Mr. Dick Grimshaw in 1988
International Vetiver Workshop, Fuzhou 1997 → Highway
International Conference on Vetiver Bio-Engineering Technology, Nanchang 1999
THE THIRD INTERNATIONAL CONFERENCE ON VETIVER

VETIVER AND WATER

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GUANGZhou, P.R. China

October 6-9, 2003

2003年10月6-9日

Guangzhou, China

October 6-9, 2003

2003年10月6-9日

Guangzhou, People's Republic of China
Vetiver can fully protect the slopes in just 100 days since planting.
Vetiver stabilized slope & protected environment
Vetiver for Han River bank protection
Railway constructed with silt was protected with vetiver in just 3 months since planting
Vetiver for city waste water treatment
Rubbish filling land
Important role of Private Sectors and individual person:

Since 1999 Nanchang Conference:

1. Actively involve in ALL sections (highway, railway, river bank, landfill) so long as VS can be used to earn profit.
2. Enable VS sustainable, only can they! (Not universities or research institutes!)
3. Private companies established Provincial network, actively involving VS dissemination and extension.
2. Vetiver-based Agroforestry for - Erosion Control, - High Quality Commercial Tree Production, and - Food Increase
Soil erosion in the Dabie Mountains
Problem:
Large scale development caused serious erosion
Use dead plants to fix slopes
Using stone to fix terrace before, now using vetiver
## Vetiver-based agroforestry projects (2007-2014)

<table>
<thead>
<tr>
<th>Times</th>
<th>Project title</th>
<th>Commercial trees</th>
<th>Area (Mu)</th>
<th>Location of project</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007,5-2009,4</td>
<td>Vetiver and Agroforestry Technology for Rural Poverty Alleviation and Natural Resource Protection in Minority Mountains of Guangxi Province of China</td>
<td>Peach + plum</td>
<td>100</td>
<td>Batan Village, Sishui Township of Longshen County, Guangxi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plum, pear</td>
<td>160</td>
<td>Zhoujia Village, Sishui Township of Longshen County, Guangxi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loquat</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>2009,5-2011,4</td>
<td>Vetiver Based Agroforestry for Poverty Alleviation and Soil Conservation in Dabie Mountains of China</td>
<td>Tea planting</td>
<td>100</td>
<td>Ganghe Village, Changpu Township of Yuexi County , Anhui Province</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Old tea reform</td>
<td>50</td>
<td>Shuifan Village, Changpu Township of Yuexi County , Anhui Province</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bamboo</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tea</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>2011,5-2013,4</td>
<td>Rural development and environmental protection in the Dabie Mountains of China</td>
<td>Bamboo</td>
<td>100</td>
<td>Ganghe Village, Changpu Township of Yuexi County , Anhui Province</td>
</tr>
<tr>
<td>2013,5-2015,4</td>
<td>Rural development and soil erosion control in the Dabie Mountains of China</td>
<td>Oil tea camellia</td>
<td>250</td>
<td>Daifan Village, Shuanghe Township of Jinzhai County, Anhui Province</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bamboo</td>
<td>100</td>
<td>Zish Village, Toutuo Township of Yuexi County, Anhui Province</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tea planting</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Old tea reform</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Old tea reform</td>
<td>300</td>
<td>Daifan Village, Shuanghe Township of Jinzhai County, Anhui Province</td>
</tr>
</tbody>
</table>
Economic Trees:

Peach, plum, Pear, Loquat, Tea, Bamboo
Oil tea (Camellia), Old tea reform

Intercropped by food crops:
Corn, soybean
VS for terrace fixing for economic trees
Vetiver-maize-tea system
VS for rural road fixing
Tea trees protected by vetiver grass in just 3 months
Tea quality improved
Chestnut tree protected by vetiver
Discussion on Vetiver-maize-tea system

- Erosion control
- Food
- Economy
Loquat intercropped with soybean
# Tea plantation production (Changpu of Yuexi County)

<table>
<thead>
<tr>
<th>Year</th>
<th>Production of fresh tea leaves (kg)</th>
<th>Production value of tea (Yuan/Mu)</th>
<th>Intercropped maize (kg/Mu)</th>
<th>Production value of maize (Yuan/Mu)</th>
<th>Total production value (Yuan/Mu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td></td>
<td>200</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td>200</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td>150</td>
<td>375</td>
<td>375</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>60</td>
<td>2,000-3,000</td>
<td>0</td>
<td>0</td>
<td>2,500</td>
</tr>
<tr>
<td>2014</td>
<td>120 (estimated)</td>
<td>4,000-5,000</td>
<td>0</td>
<td>0</td>
<td>4,500</td>
</tr>
<tr>
<td>2015</td>
<td>150 (estimated)</td>
<td>5,000-6,000</td>
<td>0</td>
<td>0</td>
<td>5,500</td>
</tr>
</tbody>
</table>

The intercropped crops can promote tea growth
Small water pond for irrigation
Dam construction for rice irrigation
Install water pipes
Discussion on project improvement
Main Project contents:
Vetiver hedges
Economic trees
Food crops intercropped
Animal raising
Irrigation and water conservation
3. Systematic Technical Training and Extension (for - project implementation and - VS extension)
3.1 Content of training and extension

- The characteristics and growth habits of vetiver, its role and efficiency on conserving water and soil, and the technology of reproduction;
- Multiple utilization of vetiver pruning.
- Reconstruction of eroded terrace and sloping land by VS;
- Agroforestry technology that can increase farmers income, enhance food security and prevent soil erosion;
- The importance of plant and crop diversity;
- The planting technology of nitrogen fixation trees, bushes and crops, which can improve soil fertility and realize sustainable agriculture;
- Contour planting technology;
- Planting and management of commercial trees (bamboo and tea in particular);
3.2 Methods of training and extension

**Regular training:** Classroom lecture training combined with field practice.

**Self-study:** Plenty of training materials were produced for free distribution to enable farmers to do self-study. Experts and technicians were arranged to give field guidance.

**Field visitation:** Farmers are organized to visit nice demonstration plots and promote farmers to learn from each other.
3.3 Materials of training and extension

Training manuals

Newsletters (produced for 20 years since 1996 with 80 issues totaling over 24,000 copies)

Fact Sheets

Posters

Vetiver New Year’s Greeting Cards:

Scientific books:

  Vetiver Research and Development (1998)
  Vetiver System and Its Research and Applications in China (2003)
  The Theory and Practice of Vetiver System (2008)
Booklets
Newsletters for 20 years since 1996
FACT Sheets
Posters from TVNI
New Year Cards
Hand to hand training for farmers in the Dabie Mountains
Lecture presentation by vetiver expert
Lecture on the use of vetiver for economic tree protection
Tea cultivation training
Wide distribution of vetiver printed matters to women
4. 
Vetiver handicraft trainings
-to enhance women’s social and economic position and
-to protect rural environment
Importance of vetiver handicraft

- Help poor farmers increase income
- Encourage to plant more vetiver for erosion control
- Substitutes to replace plastic articles for farming and for family use to reduce plastic pollution.
- Good opportunity to exchange technical and social opinions and ideas.
- In some places women established their own organization to enhanced women’s social and economic position.
- Can bring farmers a colorful life
# Vetiver handicraft training courses (2007-2013)

<table>
<thead>
<tr>
<th>Number</th>
<th>Time</th>
<th>Location</th>
<th>No. of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>22 Oct.-3 Nov. 2007</td>
<td>Lipai, GX</td>
<td>25</td>
</tr>
<tr>
<td>No. 2*</td>
<td>28-30 April 2009</td>
<td>Maluo, GX</td>
<td>36</td>
</tr>
<tr>
<td>No. 3</td>
<td>22-28 Oct. 2009</td>
<td>Batan, GX</td>
<td>20</td>
</tr>
<tr>
<td>No. 4</td>
<td>29 Oct.-11 Nov. 2009</td>
<td>Zhoujia, GX</td>
<td>24</td>
</tr>
<tr>
<td>No. 5</td>
<td>16-29 Nov. 2009</td>
<td>Changpu, AH</td>
<td>22</td>
</tr>
<tr>
<td>No. 6</td>
<td>11-17 Oct. 2010</td>
<td>Shuifan, AH</td>
<td>20</td>
</tr>
<tr>
<td>No. 7</td>
<td>10-23 Oct. 2011</td>
<td>Dafan, AH</td>
<td>25</td>
</tr>
<tr>
<td>No. 8</td>
<td>24 Oct.-6 Nov. 2011</td>
<td>Ganghe, AH</td>
<td>20</td>
</tr>
<tr>
<td>No. 9</td>
<td>8-13 Oct. 2013</td>
<td>Dafan, AH</td>
<td>27</td>
</tr>
<tr>
<td>No. 10</td>
<td>16-29 Oct. 2013</td>
<td>Toutuo, AH</td>
<td>26</td>
</tr>
</tbody>
</table>
Types of the training course

(1) **Primary Training** Course lasted for 10-14 days; and

(2) **Advanced Training** Course lasted for 6 days foster trainers.
The content of the course:

- Key presentations introducing the main procedures for vetiver handicraft production,
- Poster presentations on vetiver for soil erosion control,
- Exhibition of handicraft products from former trainings,
- Powerpoint and VCD performances,
- Hand to hand practice and group discussions,
- Exhibition and evaluation of trainees’ handicraft products,
- Questionnaire and conclusion,
- Final evaluation and awarding to best trainees,
- Extended training by the trainees and thorough information distribution,
- Distribution of vetiver planting materials to trainees for the continuation of handicraft production.
Problems in vetiver handicraft development:

- Needs a little longer time to training.
- Little bit of support is needed to let participants initiate and develop the local market.
- Longer time for farmers to get profit: to grasp skill, improve product quality, design and produce new products based on the local market, and then make products in large quantities.
- In poor and remote mountains the development is rather fragile, influenced by many factors. For instance, transportation facility.
- The main products should be correctly selected and designed and should meet local culture or history.
No. 1: Introduce vetiver handicraft technology to China from Thailand
Time: 22 Oct. - 3 Nov. 2007
Location: Lipai, Guangxi Province of China
The three experts from Thailand
The opening ceremony
Awardees, trainers and organizers
Say good-bye to trainers
No.2: Extend technology in Guangxi Province by local government
Time: 28-30 April 2009
Location: Maluo, Guangxi Province of China
The opening of the course
No.3: Improve skills and select trainers
Location: Batan, Guangxi Province of China
Minority girls learning to make vetiver handicrafts
The closing ceremony
No.4: Extend vetiver handicraft technology in Guangxi Province
Location: Zhoujia, Guangxi Province of China
The opening of the training course
Group photo of the training course
No.5 Introduce vetiver handicraft technology to Anhui Province
Time: 16-29 Nov. 2009
Location: Changpu, Anhui Province of China
Photo exhibition on vetiver system
Group photo of the training course
No.6 Improve skills and foster trainers for further trainings in Anhui Province
Time: 11-17 Oct. 2010
Location: Shuifan, Anhui Province of China
The opening ceremony
Discussion on the revision of model
Distribution of multiple vetiver publications
Investigation on vetiver planting
The training course report on the TV
No.7 The first vetiver handicraft training course in Jinzhai County of Anhui Province
Time: 10-23 Oct. 2011
Location: Shuanghe, Jinzhai County, Anhui Province of China
Lecture on vetiver handicraft
Leaders from the Province and the County
The initiation of the handicraft
No.8 Introduce vetiver handicraft technology to Ganghe & Zhuangzhong villages in Changpu of Anhui Province
Time: 24 Oct.-6 Nov. 2011
Location: Ganghe Village, Yuexi County, Anhui Province of China
The opening ceremony
Preparing products for awarding
No.9 The 2nd vetiver handicraft training course in Jinzhai County
Time: 8-14 Oct. 2013
Location: Shuanghe, Jinzhai County, Anhui Province of China
The opening ceremony
The workshop
The champion
No.10 The 1st vetiver handicraft training course in Toutuo Township of Yuexi County
Time: 15-29 Oct. 2013
Location: Zishu Village of Toutuo Township, Yuexi County, Anhui Province of China
Lecture: the basic procedural
Listening very carefully
May I participate?
The workshop
All of the attendees
A hat to be finished
Part of the products
Visitor and vetiver handicraft products
Part of products
Part of products
The little model and new vetiver product
Part of the products
Multiple products produced
Part of the products
Model and product
Initial products
Exhibition of the products
To beautify their room
Vetiver shopping
Competition & awarding
Certificates from TVNI
5. Conclusion

Vetiver was found to be a miracle grass for use in agriculture since many years ago and should serve agriculture and farmers continuously. VBAF plus multiple trainings and extensions were proved to be an excellent measure for agricultural production and rural development, which cannot only reduce soil erosion, but also help farmers, get direct income and improve their social and economic position, protect rural environment and bring farmers a colorful life.
Future Consideration
Support private companies and individuals
only way for VS sustainable

A Normal Companies
B Family Companies
C Individuals (one person)
Encourage Provincial Network
Encourage farmers organization on VS
D
Promote regional, bi-lateral cooperation on Agri., Environment, Bio-energy, Medicine and health care, Planting materials
Thank you for your attention