

## Rural Development and Environmental Protection in the Dabie Mountains of China-- New Project launched

### Abstract

To relief poverty, control water and soil erosion, and protect rural environment, vetiver system and agroforestry technology will be introduced and extended in the Dabie mountainous in Yuexi County and Jinzhai County, Anhui Province.

(1) Two vetiver handicraft training courses will be organized to strengthen and disseminate the skills. 40 women as new trainees will receive vetiver handicraft training.

(2) Totalling 4000 bamboo will be planted; 400000 vetiver seedlings be established as hedges to control soil erosion.

(3) 100 sets of bio-gas facilities will be constructed.

(4) 100 goat will be raised by 20 poor families.

(5) Water facility reconstruction for food security.

(6) 250 Mu *Camellia oleifera* cultivation.

(7) A series of technical trainings will be conducted, 400 farmers will receive directive trainings.

(8) Many training and extension materials will be produced in large quantities and widely distributed for extension purpose. Numerous farmers will get in-direct training.

The project will last two years from May 2011 to April 2013.

## 1 THE PREPARATION AND INITIATION OF THE PROJECT

Before the project started many preparations were conducted through bilateral visits, holding meetings and field investigations in order that the project can be implemented more smoothly and completed as soon as possible (Table 1). This is especially necessary for Jinzhai County, the new project site. The Jinzhai County was situated in the hinterland of the Dabie Mountains that covered about 100000km<sup>2</sup>. Farmers there had lot of difficulties in their life. Especially since 1950's several reservoirs were constructed that caused a loss of 100000 Mu (about 6700 ha) of fertile land and 140000Mu (about 9300 ha) economic trees. Totalling 100000 farmers had to immigrated, which aggravated the difficulty of farmers' life.

In addition, a tentative timetable for the implementation of multiple project components was proposed and the budget request schedule was divided for different components. The timetable of the implementation was mainly based on the preparation and local natural condition as well, such as local climate. For example the first vetiver handicraft training course was set in October 2011 in Jinzhai because the climate there is rather colder than Yuexi County, while in Yuexi farmers were just busy with rice harvesting at that time.

## 2 WATER FACILITY RECONSTRUCTION FOR FOOD SECURITY

### 2.1 The repairing of two ponds

In the Dabie Mountains there is very little farmland. The most important farmland, the rice field, is very valuable, accounting for about 5.9% in Jinzhai County. The rice production provides the basic food in the mountains in the long history. To guarantee rice production small dams were constructed to restore water for irrigation purpose in 1970's. However, since national economy reform all of the land was divided to small pieces and allocated to individual farmer, the dams and ponds have not got proper maintenance in the recent about 30 years and gradually lost their function.

In the beginning of 2011 when local farmers heard of that the ponds were to be reconstructed they all voluntarily took part in the process of ponds reconstructions. At first they were organized to clear up sediment before the coming of raining season, which lasted about one month. At same time, the Village Committee search for material supplies for the supply of best and cheap materials such as cement and sands and necessary technicians. In addition, a leading group was established to arrange the whole process.

Since all of the preparations were conducted once they got the news of the approval of the project they finished the main work of repairing the ponds in just one month, which enabled the storage of irrigation water as early as possible and led to very good rice harvest.

## 2.2 The benefit from the reconstructed ponds

The weather this year was extremely vagary. There was no efficient fall from spring to summer, totaling about 50 days. For the Jinzhai County, there was about 1/3 paddy field without planting seedlings. For another 1/3 field the planting had to be postponed to mid June. For the project village, of 800 Mu (about 53 hectares), there were 300 Mu field without rice seedling planted caused by dry weather.

On the contrary, under water irrigation from the two reconstructed ponds, there were near 200 Mu of paddy field got good harvest. Each Mu produced about 400 Kg rice, totaling 80000Kg for 200Mu of field. It was double of that the seedlings were postponed to plant. As a result, they two water pond solved food problem for 200 people under bad weather year.

**Table 1 Meeting/visiting for the preparation of the project**

Time	Location	Description
5-6 May 2010	Jinzhai County	<ul style="list-style-type: none"> <li>➤ Field investigation on local land use.</li> <li>➤ Planting system and food production.</li> <li>➤ Irrigation system and water facility.</li> <li>➤ Social/economic situation.</li> <li>➤ Livestock production, problem effecting farmers' basic subsistence, local market analysis.</li> </ul>
21 July 2010	Nanjing	<ul style="list-style-type: none"> <li>◆ Basic natural condition.</li> <li>◆ Crop production in Jinzhai County.</li> <li>◆ Economic tree production.</li> <li>◆ Livestock production in the history.</li> <li>◆ Handicraft production in the near-by area.</li> </ul>
15-16 Sep. 2010	Jinzhai County	<ul style="list-style-type: none"> <li>◇ Field investigation on tea production, <i>Camellia oleifera</i> cultivation, economic tree production.</li> <li>◇ Vegetable production and storage (ginger).</li> </ul>

		<ul style="list-style-type: none"> <li>◇ Insect protection.</li> <li>◇ Fertilizer applications.</li> <li>◇ Organic farming.</li> </ul>
28-29 Mar. 2011	Jinzhai County	<ul style="list-style-type: none"> <li>✚ Introduction to vetiver grass and its application in agriculture, infrastructure protection, environmental protection, etc.</li> <li>✚ Local tourism development and possible market of vetiver handicrafts, local handicraft production.</li> <li>✚ Preparation for the early initiation of the project (farmer mobilization, material preparation and transportation).</li> <li>✚ Detailed location for <i>Camellia oleifera</i> planting, vetiver planting.</li> <li>✚ Budget and financial regulation.</li> </ul>

Later, in October 2011, villagers were organized to finish remaining work of the water irrigation system. About 1300m pipes were installed leading spring water to the pond in order that the irrigation system has plenty water source and can last long time and produce best profit.

To control soil erosion and protect sediments from moving into the water ponds vetiver hedges will be established next spring. It is expected that the ponds can work for at least another 20 years and farmers' food supply can be guaranteed.

### 3 TWO VETIVER HANDICRAFT TRAINING COURSES

#### 3.1 The first vetiver handicraft training course in Jinzhai County

Of two vetiver handicraft training courses planned in the project, the emphasis was put on that held in Jinzhai County because it had outstanding tourism markets which should be good for handicrafts selling. As early as on 22 July 2011, the 3 people from China Vetiver Network visited Jinzhai County. They brought farmers lots of materials, tools, and printed matters. All of these things are necessary for vetiver handicraft training.

In addition, plenty of artificial flowers were sent to Jinzhai in August that will be used for vetiver handicraft products marketing in order that women farmers can get income immediately once they got handicraft technologies.

To guarantee the supply of vetiver leaves, large quantity of leaves were cut, boiled in water, and dried in Jiangxi Province. Then, on 20 August 2011 totaling 180 kg dried leaves were sent to Jinzhai, in addition to plenty of vetiver planting materials (seedlings).

##### 3.1.1 The selection of trainers

In early September the selection of 3 trainers in Changpu Township of Yuexi County was seriously carried out. The main parameters for the selections are:

- ◆ They should grasp the vetiver handicraft technology well and can make at least one kind of vetiver handicraft at top quality.
- ◆ They should be fond of cooperating with others and can teach others hand-by-hand patiently.
- ◆ At least one trainer can make models in high quality and with high quantity in a short

time so that it can meet the needs of trainees.

- ◆ They should have good health.

To make the selection more substantially and equitably a table was prepared to summary the basic information on the candidates, which showed their experience during vetiver handicraft training courses in the past years (Table 2).

### 3.1.2 The implementation of the training course

The training course was started on 10 October 2010 at Dafan Village of Shuanghe Township of Jinzhai County. Slogan was hung outside the training hall, which said “Develop vetiver handicraft industry and protect rural environment”. It indicated that from the beginning the selling of the products was put on an important position and a new Industry should be developed.

In addition a photo exhibition was prepared to tell farmers:

- ◆ The basic characteristics of vetiver grass;
- ◆ Vetiver for agriculture production;
- ◆ Vetiver for engineering and environmental protection;
- ◆ The information dissemination in China.

**Table 2 Basic information of candidates for trainers selection**

Order	Name*	Awards receiver (2009)		Awards receiver (2010)			be adept at producing
		Grade	Product	Grade	Product	Duty	
1	Xu Lixia	2nd	vase			Group leader, trainer	Model-making; different products; can use computer
2	Wang Linfang	1 <sup>st</sup>	bag			Group leader, trainer	bag
3	Liu Dongmei	3rd	bag	2nd	cap	Vice Group leader	Bag, cap, mat
		coop	mat				
4	Yan Taolin	3rd	hat	1st	hat	Vice Group leader	hat
5	Zhou Shuwei	2nd	basket			Group leader, trainer	basket
6	Liu Yonghong	2nd	Hat			Group leader, trainer	Hat, mat, etc.
		coop	mat				
7	Cheng Qingxiao			3rd	bag		Hat, mat, etc.

\* Based on self-nomination

Totaling 20 trainees were divided into 3 groups and each trainer was responsible for a group. However, a little later more woman wished to participate in the training course. At last there were 30 participants, which indicated that women had high enthusiasm in vetiver handicraft production.

The opening ceremony was organized in the morning. Directors of the county

government and township government attended, in addition to news agency. The main contents of addresses and presentations were:

- Introduction to vetiver system.
- The procedurals of vetiver handicraft production.
- How to make models for handicraft production.
- Introduction to vetiver handicraft products from China, Thailand and India.

The government leaders expressed their strong support to the training and requested trainees to learn earnestly. Meanwhile they hope to use vetiver grass to protect earth terraces and mine tails. There are large area needs to be protected and re-vegetated. In the recent years many mine tails and quarry appeared in the village they brought farmers income but meantime led to environmental problem. They also expressed their thanks to EED and Germany Government for their support to the project. Additionally, they wished to thank trainers from Yuexi County for their long time travel and selfless work.

To enable the training to be most successful, multiple training materials were distributed to trainees. Furthermore, China Vertiver Network bought some technical book and sent to the village, that were badly needed for modern farming, such as *Camellia oleifera* cultivation, organic rice production.

The representative of trainers MS. Xu Lixia was invited to give speech. She pointed out that the trainees can grasp vetiver handicraft technology and therefore could increase their income and social position. She encouraged participants to study unwearingly and learn from each other in order to get unsurpassed achievements and to sell their products successfully.

To disseminate the training and the project more rapidly and widely several news agencies and reporters were invited to attend the ceremony and reports were found on their websites:

- Jinzhai County News website.
- Jinzhai County Pioneer website.
- Liuan City News website.
- Liuan City Commercial News website.
- China Anhui (province) News website.
- West Anhui Daily News.

The active involvement of news agencies will surely generate great impact in the nearby area and the country. The training course attracted attention of local governments. On 11 October a group of leaders from province, city and county visited the training course and expressed their support.

To guarantee the training course to be successful, the Village Committee prepared a series of regulations such as daily working time, fire protection, and daily workshop clearing. All of the trainees were divided into 3 groups one leader was proposed for each group.

The whole training course lasted 2 weeks and included:

Day 1-2: Opening ceremony and initiation:

- (1) Introduction to vetiver for soil erosion control and slope stabilization
- (2) Introduction to vetiver handicraft production
- (3) The preparation of vetiver leaves
  - Cutting of vetiver leaves

- Selection of vetiver leaves
- Boiling and drying of vetiver leaves
- To dye vetiver leaves
- (4) Preparation of the models
- (5) General introduction on different models for boxes, hats, baskets, etc.

Day 3-11 Making of vetiver handicraft products

- Small boxes (2 days)
- Hats, bigger bags and baskets (4 days)
- Mat (1 day)
- Model making (2 days)

Day 12 Handicraft finishing and decorating

- Sulfur fuming
- Lacquer glazing

Day 13: Evaluation, selection and awarding; Closing ceremony.

### 3.1.3 The evaluation and awarding

To encourage trainees to produce high quality products, in afternoon 22 October 2011 the awarding was processed. At first each trainee selected her best product for evaluation, competition and awarding and totaling 25 products were exhibited. Then Prof. Wang from China Vetiver Network announced the parameter for the selection. The parameters considered for awards selection were:

- ✧ Material selection: including the color, thinness and length of the leaves, the treatment of the leaves.
- ✧ Manufacture skills: the transition of different parts of a whole product should be smoothly, without break, joint and void.
- ✧ Decoration: design, the patterns, attached small decoration material, etc.
- ✧ Formative level: the whole product should be beautiful as work of art.
- ✧ Complexity: If the product was easy or difficult to make.

All of the products were exhibited and evaluated. The selection was done by secret ballot. All of the trainers, trainees, and organizers had rights for voting. Totaling 8 women got awards (Table 3)

**Table 3 Results of awarding**

Name	Age	Education	Product for awarding	Oder of prize	Duty
Chen Tangmei	37	Junior middle school	Wine bottle cover	1st Award	
Hu Guangjun	29	Junior college	Ellipse container	2 <sup>nd</sup> Award	Group leader
Wu Mingming	24	High middle school	Ellipse vase	2 <sup>nd</sup> Award	
Zhu Yingxiu	45	High middle school	Pen container	3 <sup>rd</sup> Award	Class Director
Shen Naixiu	46	Junior Middle school	Bag	3 <sup>rd</sup> Award	
Cai Xianxia	39	Junior middle school	Vase	3 <sup>rd</sup> Award	
Sun Hueie	31	Junior Middle school	Mat	3 <sup>rd</sup> Award	
Bo Lihua	42	Junior Middle school	Bag	3 <sup>rd</sup> Award	

Additionally, during the process of the course 5 products were selected and sent to Canton Fair (see below). The producers also got awards equal to 3<sup>rd</sup> award.

In addition to financial awards, all of the trainees got a set of photos showing different vetiver handicraft produced in China and Thailand. It will be very useful for them to design and produce new handicrafts.

Although the training course was very successful, or even preponderate over the expected, there are still some problems. There was not any dyed vetiver leaves caused by raining weather until 14 October 2011. As a result, for the forthcoming trainings it is needed to prepare some dyed leaves before the trainings.

It was decided that vetiver seedlings will be distributed to each trainees next spring for their own reproduction in order that handicraft production can be sustainable.

### **3.2 Vetiver handicraft training course in Yuexi County**

The second vetiver handicraft training course was held in Yuexi County from 24 October to 6 November 2011 (please next Project Progress Report) .

## **4 THE CONSTRUCTION OF BIO-GAS FACILITIES**

Historically, farmers in the mountains use firewood as only fuel source, which caused tremendous loss of forestry, leading to water and soil erosion and natural disasters. It is reported that a bio-gas tank of 8 m<sup>3</sup> can produce bio-gas equal to fuel wood production of 0.2 hectare or the biomass of steppe for 10 ha. Therefore the application of bio-gas can protect forest and reduce water and soil erosion and relief natural disasters. In other words, the construction of a bio-gas facility means the afforestation for about 0.2 ha that should benefit rural environment and the global climate change.

In addition, the application of bio-gas can help women reduce time for cooking and therefore have more time involving other work, vetiver handicraft production for example and also can improve their work condition during cooking.

Bio-gas tanks produced good quality manure which can reduce the application of fertilizer, benefiting sustainable farming.

In May 2011 China Vetiver Network distributed printed matters to local farmers and later they organized lectures that contained main contents:

- \* Why using bio-gas?
- \* Basic information on the construction of bio-gas (such as materials needed, shape and volume of the tank).
- \* How to construct bio-gas facility.
- \* Procedurals of the constructions.
- \* Proper depth of the tank.
- \* The relation between the tank, toilet and hog pen.
- \* The proper cover of the tank.
- \* The pipe installation.
- \* How to use bio-gas safely, which included 10 key points to guarantee safety.
- \* Maintenance and trouble-shooting of bio-gas facilities.

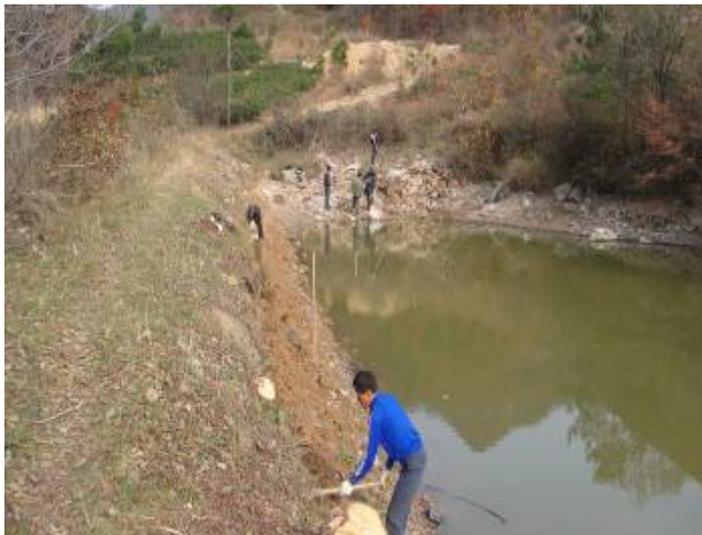
Lectures containing similar contents were presented in the village. It showed farmers

vivid pictures.

Through information dissemination, lecture presentation and visitations farmers realized the importance and benefit of the application of bio-gas. Numerous farmers self-nominated to construct bio-gas. At last the first 50 farmers were selected. As a result the construction process was done smoothly. The main procedures included material preparation, tank construction, and gas cooker installation. The technicians were invited from the County Bio-gas Office. Since they are specialists in the construction, the whole job was done very quickly and finished in September 2911.

(Attachment: related photos)

## Project Report No.1 (2011-1013) Photos



Preparation for reconstruction



Preparing materials



HuangPiJian pond repaired



Reconstruct ditches and install pipes



Shisan pond reconstructed



Good harvest obtained under irrigation facility



Cut vetiver leaves



Boil and dry vetiver leaves



The opening ceremony of training course in Yuexi County



Lecture: why control soil erosion?



Listening carefully



Leaders from Province, City and County



Prepare leaves



Start to handcraft



Study very earnestly



A vase finished



Voting for awards



Count vote bullets



Part of the products



The closing ceremony



Awardees



Bio-gas in construction



A bio-gas tank was finished



Cooking using bio-gas