A Brief Introduction to Several Representative Vetiver Projects Conducted in Guangdong Province, China

1. The Guangzhou Datianshan Garbage Landfill

The landfill is located in the east suburb of Guangzhou, over 20 km apart from downtown. It was ever the largest landfill of Guangzhou and but has been closed since 2002, as it had been filled up by garbage.

The three images to the left show the landfill prior to treatment with vetiver.

On April 10th, I went there again, after 6 years of treatment with vetiver grass

and could not help commending the vetiver project for its magnificent landscape and excellent ecological effects.

The two photos above are of the west slope of the landfill, namely the first slope that can be seen when visiting the landfill.

The above three photos are of the opposite east slope and the one below is the north slope.

The three slopes were stabilized with vetiver in 2000-2001. Nearly six years has passed, vetiver still grows very luxuriantly and the hedgerows have become denser and denser.

The following photos are of the top of the landfill, planted with vetiver in 2004 and 2005. Although vetiver was planted in less than two years, the hedgerows are quite tidy, trim, dense, and lush.

Obviously, the reason that vetiver grows so lush is because it can utilize rotten garbage as fertilizer and absorb nutritional elements to its body. As a matter of fact, the whole landfill, approximately 100,000 m^2, has been covered by vetiver. There is no any erosion or landslip on the top and all slopes, which are all intact and stable in spite of the fact that these slopes were all formed through artificial fill-up and furthermore there are many storms each year in Guangzhou. You even cannot feel any stink or bad smell in here although it is a huge garbage landfill!

2. The Zhongshan Difengshan Garbage Landfill

The landfill is situated in the Difengshan Hill of Zhongshan City, about 120 km south to Guangzhou.

Its main function is treating garbage leachate, not filling garbage). The vetiver project was implemented in the spring of 2003, and covered all slopes of the landfill, up to 60,000 m^2. The project was one of the field visit sites of ICV-3, and gave a good impression on most participants. On April 25th, I visited it again. Regretfully, vetiver does not grow so green or lush as before although hedgerows still exist.

The chief reason, I think, is that the trees of Eucalyptus planted concurrently with vetiver have grown up; as a result they shade vetiver. It is well-known that vetiver is heliophytes and C_4 plant, and shading produces a serious influence on its growth and development. The other reason is probably from the extremely infertile soil. All the slopes here were newly cut, so there is no surface layer soil, and furthermore the soil itself is quite infertile lateritic red earth. What's more, Eucalyptus is a type of plant species that has very strong competitive ability, and uptake large amounts of water and nutrition from soil, and moreover it still has allelopathy to other plants and, therefore, can prohibit other plants from growing and developing. Due to the above reasons, the growth and performance of vetiver are not so good

However, vetiver sill most effective for slope stabilization on some slopes, especially on some rocky slopes, (see below)

on which eucalyptus trees cannot be planted or grown; furthermore, the whole slopes in the

landfill protected by vetiver have never produced landslips or severe erosion, indicating that vetiver is still quite effective for protection of bare slopes in spite of poor growth.

3. The Huizhou College

The Huizhou College lies in the suburb of Huizhou City, about 170 km east to Guangzhou. The vetiver project was implememnted in April 2001 with the total area of nearly 30,000 m^2. It was for protecting a long slope of a hill encircling the playground and one office building. The efficiency for slope vegetation and stabilization was quite good in the first two years. On the Labor's Day, I came here again especially for a visit.

Looking from far away, the whole slope, covered completely by the dense vetiver hedgerows and other plant species, is quite stable and intact, and the building on the top of hill looks very staunch.

However, when you go to the foot of the slope, you can see that vetiver looks a little bit brown, and many species of other plants, particularly ferns, thrive with vetiver.

Of course, neither landslide nor erosion can be seen on the whole slope due to effective protection and stabilization of vetiver. As to photo HZC-05~07, they are from another slope nearby a student dormitory building. Obviously, the slope is stable and the building is also safe under the shelter of miraculous vetiver despite of the fact that the slope is over 60°.

4. The estuary of Pearl River

The Pearl River goes into the South China Sea through many estuaries. Among them, at least one estuary is in the region of Zhongshan City. At one estuary, there is a large block of land lied along the both sides of the river, whose soil is river mud dug up from the river; as a result, almost no plants can grow or even survive due to very high salt content in soil. It is necessary to vegetate the block of land and to protect the river bank via an eco-engineering measure. Finally the vetiver eco-engineering was selected for the purpose. The project was conducted by the Guangzhou Hongri Landscape Engineering Co. Ltd. at the end of September to November of 2005, (a very dry season for vetiver). I made a special visit on April 25 and was deeply impressed by it.

Brightly green vetiver closely covers an area of 120,000 m^2 with a length of over 1200 m and a width of nearly 100 m, almost forming another green “river” .

From the first sight, it looks more like a vetiver nursery. However it is not a nursery, but an

ecological engineering of vetiver protecting the bank of Pearl River.

We all know that vetiver is quite tolerant to salt, but some vetiver plants still do not survive here probably due to high content of soil salt.

We are planning to analyze the salt contents of soil and vetiver, and then report the results after finishing it. According to my personal estimation, this project is perhaps the largest vetiver project in China so far in terms of the area of individual block land.

5. Zhanjiang-Chongqing Highway

The Zhanjiang-Chongqing highway is newly-built highway open in 2005, which is from Zhanjiang, the southwest most city of Guangdong to Chongqing, the fourth municipal city of China led directly by the central government. The Guangzhou Peifeng Environmental Protection Co. Ltd., one company just established in 2004 for running vetiver exclusively, has done about 70,000 m^2 of vetiver's slope stabilization projects along Zhanjiang section of the highway. Zhanjiang, nearly 500 km southwest to Guangzhou, belongs to tropical monsoon climate. Soils in here are mainly strong acidic laterite and very infertile kaolin. The vetiver projects began from April 2005 and finished in November 2005. All completed sections, including 5 blocks of up-slope and 4 blocks of down-slope, obtained very good results, and vetiver formed intact and dense hedgerows in 3~4 months. I have made two visits to these projects on 1 September 2005 and 30 May 2006, respectively.

Prior to planting vetiver, contour ditches were dug up along slopes and manure and/or fertilizer were applied along ditches.

Vetiver became green 15 days after planting.

New tillers began to be produced 30~40 days after planting .

Vetiver and other grasses, such as bahia grass, began to cover the slopes 2~4 months after planting.

One year later, trim “bio-dams” and dense “bio-nets” formed, which effectively protected and stabilized these slopes.


工程名称：香根草生态工程技术高速公路护坡工程
建设单位：广东渝湛高速工路有限公司
施工单位：广州沛丰环保科技有限公司
技术支撑：中科院华南植物研究所 夏汉平博士
施工日期：2005年4月至12月
联系电话：020-38891684 林宾
30 5 2006


30 5 2006


1 8 2005


30 5 2006

Whereas some slopes without protection of vetiver were damaged by erosion. Of the 9 executed slopes, the largest one is an up-slope, nearly 15,000 m^2. The soil dug up from the slope is all extremely infertile kaolin. Vetiver was just planted when I made the first visit in September 2005.

Two months later, vetiver began to cover the slope.

One year later, the ecological landscape of the whole slope has completely changed, not only stable, but beautiful and wonderful as well.

Especially deserving to mention, Mr. Lin Bing, the General manger of the company, used the lower and greener vetiver variety, Karnataka, introduced by Dr. Xia Hanping; as a result, the site landscape is distinctly improved while the effect for slope stabilization is almost as good as the common variety, Sunshine.

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