

Progress Report Of The Project

Vetiver Grass Technology for Wave and Current Erosion Control in the Mekong River Delta, Vietnam

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PURPOSE:

The main purpose of this project is:

- To stabilize river and canal against wave erosion in the Mekong Delta

Furthermore, we have extended the project into other aspects with agreement from Dr Paul Truong, including:

- To stabilize the dyke banks against flood erosion
- To promote the use of Vetiver Grass technology in acid sulphate and saline soils of Mekong Delta region, we have cooperated with Department of Agriculture and Rural Development to conduct the experiments testing the tolerability of Vetiver grass to acid sulphate and saline soils, as well as experiment about the use of Vetiver grass for cow feed.

STAGE ONE (from March 2001 to March 2002)

During the last 12 months, we have set up Vetiver plant nursery with areas of about 4 hectares. Plant materials will be estimated about 3,000,000 slips that are sufficient to conduct experiments at Stage II.

Plant nursery:



Four hectares of Vetiver grasses



Three month old Vetiver grasses

Besides, we have also conducted other experiments related to saline and acid tolerance of Vetiver grass as well as the use of Vetiver grass for animal feeding.

Animal feed trial:



Measuring number of tillers, plant height after one month of complete cutting down to 10 cm.

Acid sulphate trial:



Acid sulphate tolerant trial



Roots affected by Al toxicity

The most important impact of this project in the last 12 months is to increase the awareness of community on the application of Vetiver Grass Technology to control wave erosion in Mekong Delta.

Note: during the time setting up plant nursery and experiments, there has been no symptom of diseases and and insect attacks observed.

STAGE TWO (from March 2002 to March 2003)

River bank stabilization against wave erosion:

Tentative experiment:

1. Collecting information related to tide, wave, velocity of flow current, soil type, and other hydraulic conditions at this site. Based on this information, we can estimate the energy of wave through model simulation.
2. Choose the bank of about 150 m in length with equally affected by flow current, and equivalent uniformity of slope.

3. Conducting 3 treatments (4 if possible):
 - a. Grow Vetiver on the bank of 50 m
 - b. Grow "co say" on another 50 m
 - c. Keep 50 m of bank blank (control)
 - d. Grow "co nga" on 50 m (if possible)

We will pitch the metal stakes on treated and untreated bank in order to observe and evaluate the effect of Vetiver on soil erosion control. Also, we will observe and record morphological characters of Vetiver.

Sites selected:

We have visited several sites in Vinh Long and Cantho province, and come up to the decision of selecting sites at Chau Thanh district, Cantho province.



Site for comparison between Vetiver and Phragmites at Chau Thanh, Cantho province



River bank site at Chau Thanh, Cantho province

Dyke bank stabilization against flood erosion

Tentative experiment:

1. Selecting sites at An Giang province and measuring soil pH of these sites
2. Treatment: due to very low pH (2-3) at these sites, no local grasses can survive on these soils. There is only Vetiver grass used to stabilize dyke bank.

Growing 3 to 5 rows of Vetiver on 150 m of each dyke bank, depending on slope gradient and sloping length, and keeping the next 150m of bank without Vetiver as control. There are three replicates of treatments and control on each site.

Sites selected:

In the past 15 years, government have aimed to increase the rice production by constructing dyke systems of thousand kilometers surrounding rice growing areas. These dykes are used for flood mitigation in rain season and irrigation in dry season. Therefore, from growing two crops per year, farmers have currently practised triple cropping system. However, this policy combined with deforestation in upstream regions of Mekong river has serious effects on environment as water level in recent years came up to 4-5.5 m. To protect people and rice crop in flood season, local government invest millions of USD to uplift the dyke systems. Furthermore, in dry season, they must spend more millions to dredge the canal systems, due to soil eroded from the banks into streams during flood season. The Vetiver Grass Technology will provide an effective and cheap method to stabilize dyke banks and stop soil erosion during flood season. During the visit of Dr Paul Truong, we

have selected a few potential sites in Tri Ton and Tan Chau district, An Giang province. We will start growing Vetiver at these sites in the next few weeks.



The demonstration site on a submergible dyke at Tri Ton, An Giang province



The demonstration site on a large dyke at Tan An, An Giang province



Vetiver being planted on two sides of a dyke at Tri Ton, An Giang province



EXPECTED RESULTS

- To evaluate the tolerance of Vetiver grass to acid and saline soils in Mekong Delta,
- To evaluate the nutrient value of Vetiver grass as a fodder crop for dairy cow,
- To evaluate the effectiveness of Vetiver Grass Technology in stabilizing river bank against wave erosion and dyke bank against flood erosion,
- If this technology is successful, it will be widely disseminated through extension network or media to speed up the use of Vetiver grass for stabilization of river and dyke banks in the Delta.