VETIVER SYSTEM PROTECTS ESTUARY DIKES
IN THE MEKONG DELTA, VIETNAM

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INTRODUCTION

The estuarine region of the Mekong River in the Mekong Delta is a low lying and flat area, which is subjected to daily tidal movement. Thus rendering it an ideal location for aquaculture, particularly prawn (shrimp) farming.

Due to its flat topography, dikes are needed to protect the prawn ponds from daily tidal movement, king tides, tidal surge during the rainy season and occasional typhoons.

These dikes are built mostly from locally dredged alluvial materials, silt and silty clay, which are highly erodible. So they are often breached and required regular and costly maintenance and rebuilding.

When properly implemented and maintained, the following presentation clearly shows the effectiveness of the Vetiver System in stabilising and protecting two dikes: one for 12 years and another for 8 years from the adverse elements mentioned above.
A typical estuarine flat at the mouth of the Mekong River in the Mekong Delta, with native vegetation: Mangrove on low area and salt tolerant species on higher ground.
Established prawn ponds
This photo was taken in June 2007, four years after the construction of this 11km long dike. It was built as a trial site to determine the suitability of VS in stabilising its batters.
Vetiver grew well on the sea facing (outside) batter, which was subjected to king tides and occasional tidal surges.
Vetiver grew well on the inside batter, which was not subjected to king tides and tidal surges.
This outside batter was subjected to regular king tides and occasional tidal surges with highly saline brackish water (not full strength sea water). Vetiver survived and thrived under this condition.
The same dike 12 years after the construction (8 years after the previous photos) showing excellent vetiver growth

Eight Years Later
According to the dike maintenance engineer, vetiver planting stabilised the batters, as well as keeping the dike surface drier and firmer thus more stable during the wet season.
Excellent vetiver growth on both inside and outside batters.
Excellent vetiver growth in dry season and up to 2m tall in the wet season
Inside batter
Following the success of the trial, the local authority embarked on building a much larger and longer dike: 42km long, to protect a series of new ponds.
Construction of new dike started in June 2007
Eight Years After Planting

A very well protected dike and stable road
Outside batter

Inside batter
MAINTENANCE

It is obvious that prawn farmers benefit greatly from Vetiver planting, it also provided an economic incentive to other farmers living along the dike. By law, farmers are not allowed to dig up or destroy vetiver plants but they are free to harvest it for their own uses such as fodder, mulch, thatch or string making and burning to control weeds, as well as grazing their stock on the batters.
Vetiver harvested for fodder in the dry season
Regrowth after harvesting even in the dry season
Burning to control weeds in the dry season
Regrowth after burning to control weeds
Heavily grazed in the dry season.
The recommended planting design for batters like these is one row near the edge of the road and one at its foot. The space in between to be planted in rows on contour, with VI between 0.8-1.0m, depending on slope gradient.
Although these photos show that either the planting was not carried out as recommended or vetiver died out, it has successfully stabilised these batters, indicating that vetiver root mass is more important than contour rows in stabilising relatively low gradient and short slope, such as these batters.
Growth in the wet season

Keeping road free from debris
CONCLUSION AND RECOMMENDATION

When properly implemented and maintained, Vetiver System is very effective in stabilising and protecting estuarine dikes from the adverse elements commonly experienced in coastal zone.

Participation of local population is the key element to its success. This involves education, providing guidelines, instructions and support to the local people.

Last but not least, the enforcement of a firm regulatory program by the local authority