Solving erosion problems on Ambae

Ways to improve agriculture and access

Stage two of a GEF – UNDP project

AIMS:

- Enhance food security
- Control soil erosion
- Improve soil fertility
- Make feeder roads passable

NGO Responsible: Farm Support Association



Agriculture on Ambae is mostly on sloping land

Soil erosion can be a significant problem

The ash soil on slopes washes away easily

Soil fertility is being lost and crop yields are falling

Vetiver grass has been used on Aneityum for about 100 years

Marking walking tracks and stopping coastal erosion

Since 1995 Vetiver has had a new role on Aneityum

Controlling soil erosion like this...





....which was causing red mud on the beach like this.

Why this land erodes

- Soft volcanic rock that even pines won't tolerate
- Minerals in the rock are toxic to most plant species
- Drying causes high rates of rock weathering

High volumes of acidic sediment are produced each year



The new role of Vetiver grass on Aneityum

2001 photo

Contour vetiver hedges trap and hold new sediment

Namaru planted one year after vetiver hedge

Same site in 2008 – soil erosion controlled



Much less sediment on the beach now



Vetiver grass has agricultural uses too

Contour hedges slow down run-off which causes moving soil to be deposited

Thailand - 1996

Terraces quickly form

Malaysia - 1992

 400mm of sediment trapped in two years



Vetiver terraces can become quite large

• This terrace in Fiji is about 25 years old.

 Thousands of cubic metres of soil have been saved



Vetiver controls erosion all around the Tropics









Vetiver stops erosion on sloping land









The terraces formed by vetiver improve soil moisture

In high rainfall areas of Ethiopia:

- Infiltration has been increased
- Wells improved
- Crop yields improved

 10 to 20 ton soil per ha retained each year



The value of vetiver is recognised in Ethiopia

Vetiver use has become widespread over the last 25 years

17,000 households have planted contour hedges

Crop yields have increased

Vetiver is seen as an appropriate climate change adaptation





- Vetiver hedges can be combined with nitrogen fixing trees Glyricidia in this case
- Vetiver is host to mycorrhizal fungi which extract phosphate from the soil for the benefit of the crops

Vetiver recovers from burning

- Vetiver hedges can withstand years of shade
- When burnt after being shaded they quickly regrow
- They should survive in a shifting fallow garden system

This old vetiver nursery had been lost in the shade of a pine forest for almost 10 years

The plants reappeared and grew rapidly after being burnt in a fire

On Ambae the project will aim to encourage famers to:

Retain traditional shifting fallow gardening practices Plant vetiver hedges to stop soil loss Incorporate nitrogen fixing trees into the hedges

FSA will adapt the concept to suit the soils, the slopes and the farmers individual needs

Vetiver can assist in maintaining roads