

Use of Vetiver Grass in Farming, Erosion Control and Roading



A Training Manual

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FOREWORD

Vetiver grass (*Chrysopogon zizanioides*) has been used in close to 100 tropical and sub-tropical countries for a range of purposes, such as soil and water conservation, stabilizing slopes, rehabilitating land, and water quality improvement. Vetiver is a unique tropical grass which can be grown across a wide range of climatic and soil conditions. It provides a simple, practical, low cost, low maintenance and very effective means of soil and water conservation, sediment control and land stabilisation. As climate change increases the severity of both heavy rain and drought, looking after the soil and the nearby rivers and coastal areas will become increasingly important for livelihoods and food security.

Vetiver's benefits come from its infertility and lack of stolons or rhizomes so it does not become invasive. Vetiver plants on Aneityum were planted about 100 years ago along footpaths and today they remain where they were planted. It has a fast growing when young but stops when mature, very fine but very strong root structure that may reach up to 3-4 m deep over a year. This makes it tolerant to drought and resistant to being dislodged by fast flowing water during floods. Its upright, stiff stems can form a dense hedge which catches sediment and prevents run-off and erosion. The deep roots of the plant increase water infiltration and, hence, groundwater storage.

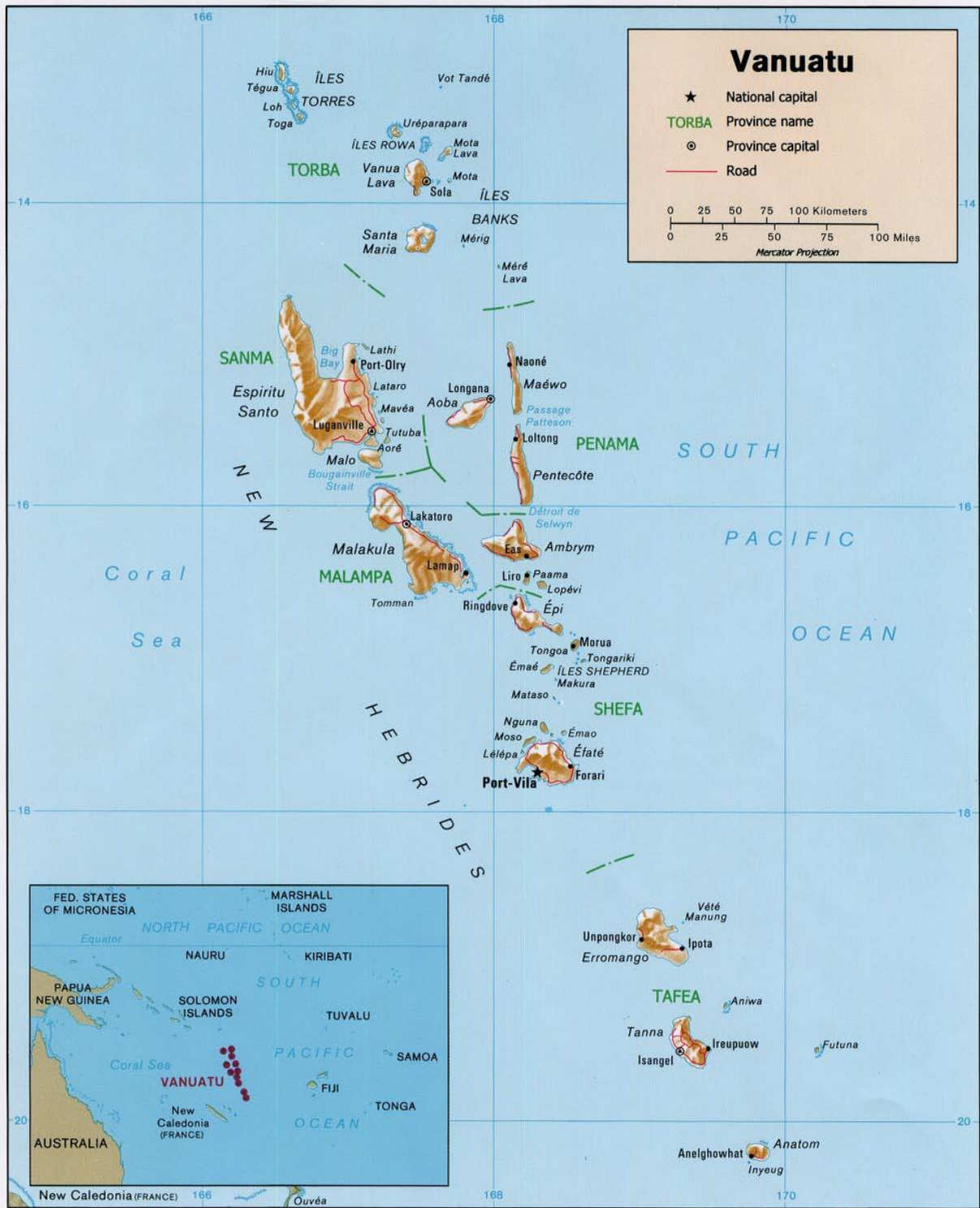
In Vanuatu, Syndicat Agricole et Pastoral de Vanuatu (SAPV) and Farm Support Association (FSA) have been involved in the use of vetiver to stabilise steep slopes on Aneityum and to prevent sedimentation from destroying the reef. It has also been used to protect roading on Ambae and Tanna, and to prevent erosion and form terraces on sloping farmland on Efate. While vetiver has been on Vanuatu for over 100 years its effectiveness has not been well utilised. This book aims to provide a guide on the ways in which vetiver can be used and how to carry this out successfully. An earlier edition written by Don Miller for FSA has provided the base material. As this book is based on our experiences, it is especially suitable for land and water protection and rehabilitation in Vanuatu.

Peter Kaoh

Associate Director

November 2017

MAP OF VANUATU



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1. INTRODUCTION

Vanuatu, with its volcanic history resulting in some steep landforms, along with heavy rainfall in rainy season, is highly prone to soil erosion on parts of most islands. This creates problems for farmers losing soil and crops, and for communities whose road access may be affected during the wet season. This erosion may also contaminate water supplies, affect coastal areas and destroy homes and lives.

This booklet has been prepared to support fieldworkers and farmers who face the challenge of controlling soil erosion on sloping agricultural lands; re-establishing vegetation on bare eroding gullies; and reducing sediment movement to coastal zones and coral reefs. It is also aimed at communities who are concerned about the loss of roading during the wet season due to road washouts. It has been written specifically for situations found in Vanuatu.

When applied correctly, vegetative systems of soil and moisture conservation (called bio-engineering) — particularly the system of hedges of vetiver grass described in this handbook — have proved cheaper and more effective at controlling soil erosion on cropping land than engineered systems. The Vetiver System has proved to be the most effective of these vegetative systems in many tropical countries. Since 1987 the technology has been tested in the field in many countries, for example, India, China, the Philippines, Indonesia, Nigeria, Madagascar, Brazil, Vietnam, Thailand and Australia.

Soils and climate vary tremendously within this group of countries. For example, in China, vetiver is grown as hedges on 60 percent slopes to protect tea and citrus crops. In India, vetiver is used on severely cracked soils on slopes of 2 percent or less. In other countries, such as Trinidad, it has been used for years to stabilize rock-based roadsides. Vetiver is used for road protection along parts of the 3000 km long Ho Chi Minh highway in Vietnam. In Vanuatu, vetiver has been used to stabilise the steeply eroded slopes on Aneityum Island (also known as Anatom) and on roadsides on Ambae and Tanna.

In every case, this unique grass has displayed the same extraordinary characteristics that make it an ideal low-cost, non-site-specific system for controlling soil loss and improving soil moisture.

Aim of this manual

This training manual has been prepared to support fieldworkers and/or farmers who are faced with the challenge of controlling soil erosion on sloping agricultural lands, re-establishing vegetation on bare eroding gullies, reducing rain damage to local roads, and generally reducing sediment movement to coastal zones and coral reefs. While it has been written specifically based on our experiences in Vanuatu, it has application to many other locations in the tropical Pacific which face similar erosion problems to control and which are likely to increase along with climate change.