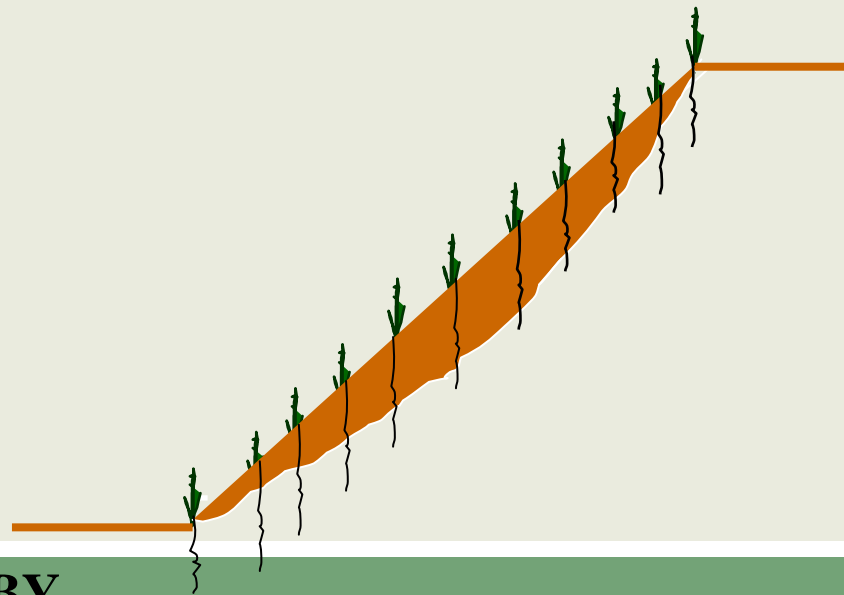


THE VETIVER SYSTEM FOR SLOPE AND ROAD STABILIZATION AND EROSION CONTROL IN THE DEMOCRATIC REPUBLIC OF THE CONGO



BY
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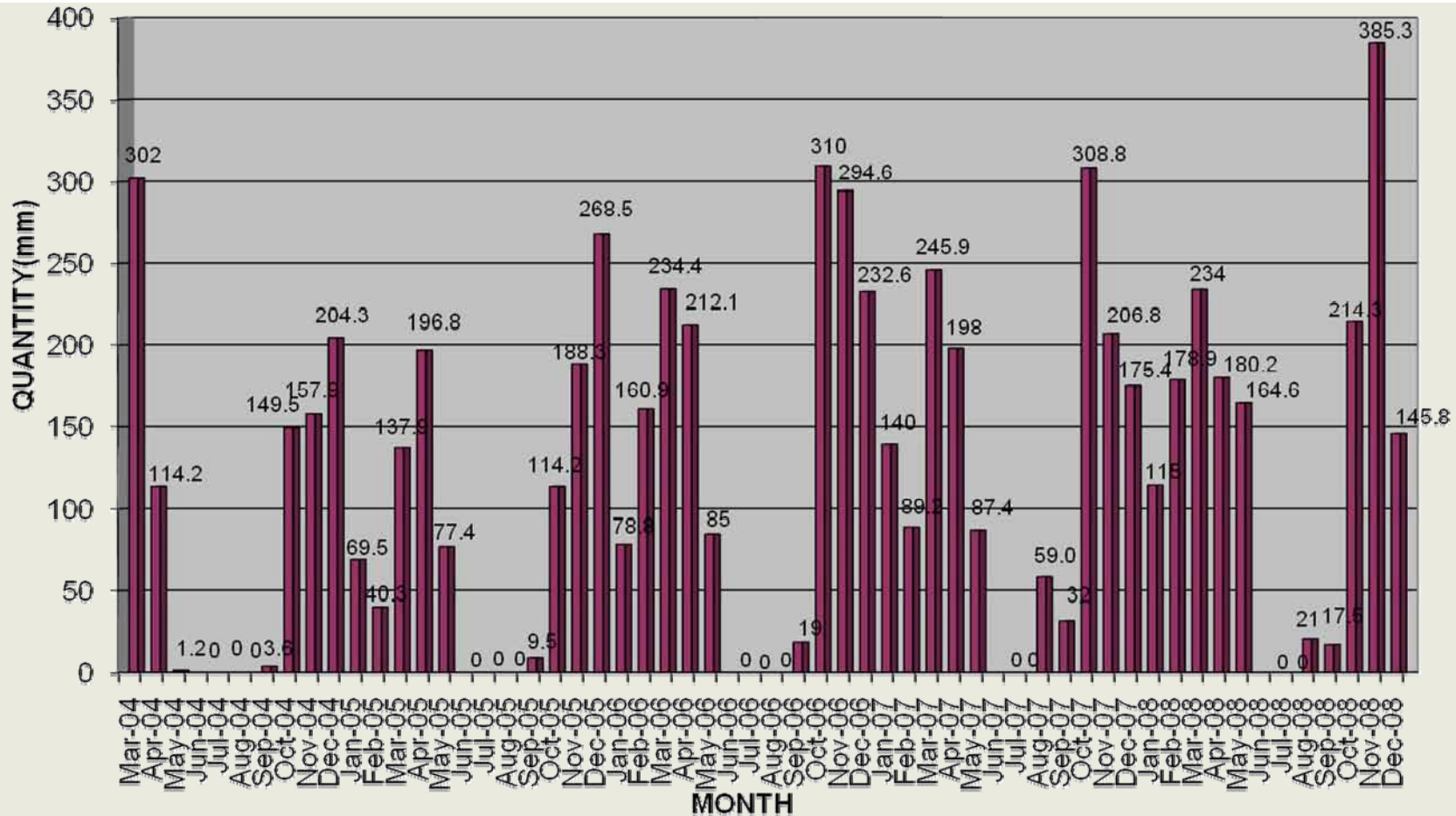
DR Congo country-wide data



- * Land area is equal to 2.345.410 square kilometers and situated in central Africa
- * It has a total population of more than 50 million with a large proportion of them living in urban areas
- * It has various climatic zones:
 - equatorial
 - temperate in the mountains
 - tropical throughout
- * Rains in the northwest are very intense and occur frequently



**THIS GRAPH SHOWS THE RAINFALL FOR THE PERIOD
MARCH 2004 - DECEMBER 2008 IN THE SELEMBAO QUARTER OF KINSHASA**



CONSEQUENCES OF HIGH RAINFALL



Erosion damage to poorly or non-protected infrastructure

CONSEQUENCES OF HIGH RAINFALL



Destroyed homes caused by erosion

Why can the use of vetiver resolve these problems?

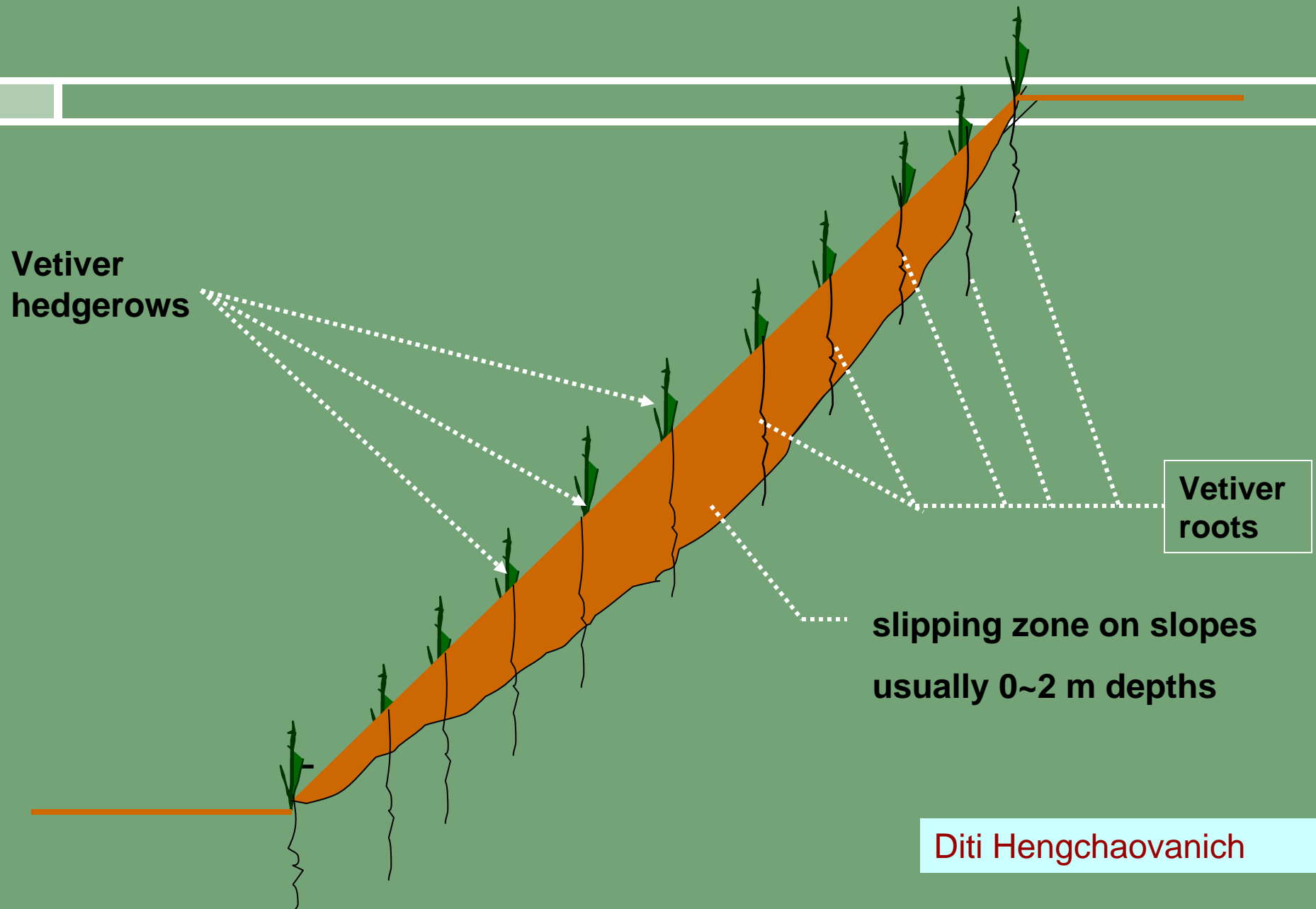


Vetiver covers the land with its abundant biomass production



It stabilizes the soil with dense, deep and strong roots

Soil stabilisation mechanism by vetiver





**THE VETIVER SYSTEM
FOR EROSION CONTROL**

Some causes of urban erosion

- ✓ **High rainfall intensity creates severe water runoff**
- ✓ **Poor construction on unsuitable land without proper drains or a drainage system, or that have drains that are constantly clogged or poorly maintained**
- ✓ **Elimination of plants covering the slopes**
- ✓ **The presence of highly erodible soils**

The role of vetiver

Its leaves are abundant and provide suitable land cover

- **Reduces the impact damage from falling rain drops**
- **Reduces the speed of runoff water**
- **Holds sediments contained in runoff behind hedges**

Its dense, deep and strong roots

- **Stabilize the soil and prevents surface erosion or bigger landslides**
- **Improves water infiltration into the soil**

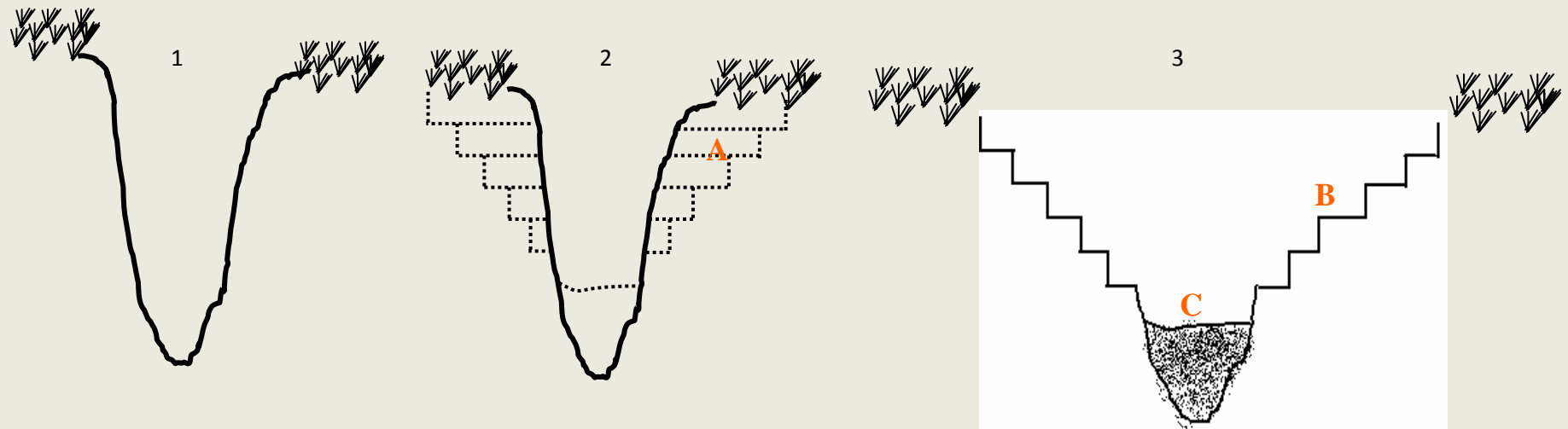
How has vetiver been used to control urban erosion?

ITPK Ravine in Kikwit



Initial state of the ravine and the benching of the slopes by the creation of terraces that follow the contours of the ravine sides.

Manual benching of ravine slopes



Legend :

- A :** Portion excavated
- B :** Small terraces
- C :** Portion filled

ITPK Ravine in Kikwit

**Planting vetiver hedges
on the terraces that
follow the contour lines**



ITPK Ravine in Kikwit

**Newly planted vetiver
hedge rows cover the
entire ravine**



**ITPK Ravine in
Kikwit**

Evolution over time

1 week after planting



10 weeks after planting



ITPK Ravine in Kikwit

4 months later



12 months later



1 week after planting



12 months later



4 months later



**ITPK Ravine
in Kikwit**

In certain cases it is necessary to stabilize the head of a gully using sand bags in association with vetiver: Kinshasa, Selembao ravine



SELEMBAO in Kinshasa

The rapid disintegration of the sand bags is compensated by the development of vetiver roots

Rebuilding the plant coverage



SELEMBAO ravine in Kinshasa

Stabilizing the gully alleyway against eroding water flows with sand bags.



SELEMBAO ravine in Kinshasa

During rain storms, vetiver plants slow down the flowing water and prevent the bottom of the gulley from growing deeper due to erosion through the creation of solid vetiver biomass



SELEMBAO ravine in Kinshasa

THE VETIVER SYSTEM EROSION CONTROL AND INFRASTRUCTURE PROTECTION IN THE CITY OF KIKWIT IN WESTERN DR CONGO

Vetiver use reinforces the efficiency of engineering structures against the effects of erosion, such as for

- Drains**
- Water holding basins**
- Etc.**

**KAGWA ravine
in Kikwit**

**Drain protection including the
water holding basin**





**Just after
planting**

**12
months
later**

**KAGWA ravine
in Kikwit**

**KAGWA ravine
in Kikwit**



At planting time

**Protection of the
water holding basin**



**12 months
later**

**KAGWA ravine
in Kikwit**



**Protection of the
water holding basin**

At planting time

12 months later



**THE VETIVER SYSTEM PROTECTION
OF CUT AND FILL EMBANKMENTS OF THE
NATIONAL HIGHWAY #1 BETWEEN KENGE
AND MASIMANIMBA IN BANDUNDU
PROVINCE**

KONZI SITE



Initial state of the embankment showing the first erosion gullies forming on the newly graded highway



KONZI SITE



Planting vetiver along the contour lines of the embankments and the use of tied contour lines on the benches





4 months later

KONZI SITE



4 months later



KONZI SITE



8 months later



MASAMUNA SITE



**Protecting the
downslope
embankments
at Masamuna**



MASAMUNA SITE



6 months later





Thank for your attention

