The Vetiver System for Infrastructure Stabilisation in Africa

(With Special References to Road Batters & Sand Dune Stabilisation in Madagascar)

By

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INTRODUCTION

Hydromulch (Pty) Ltd, has introduced the Vetiver System (VS) to many engineers on road projects in Africa in several countries: Ghana, DR Congo, Guinea, Malawi, Mozambique, South Africa, Swaziland and Tanzania.

They are now realising the erosion control potential Vetiver grass has in road batter protection. The VS has over time been overwhelmingly successful in various projects.

Where severe erosions were once the norm, one can now see the effectiveness of the VS.
The Selembao Project in Kinshasa, DRC 2004
Before and after
Vetiver planted on the RN5 road in NW Madagascar in 2007.
Road Batter stabilisation on a 70% gradient slope at the Rio Tinto Simandou project in Guinea

Side Slope showing the Erosion control capabilities of Vetiver grass hedge rows & hydroseeding
Eroded side slopes before VS treatment on a road in Northern Central Mozambique

Established side slopes after VS protection to the shoulder of the same road. Remainder of slope established with vegetation by the hydroseeding technique.
A Brief review of the Rio Tinto/QMM Ilminite Project at Fort Dauphin, Madagascar
The Ehoala Dune section of approximately 8 hectares required a major environmental rehabilitation project, as it required innovative ideas to address the extensive wind erosion problems.
The areas between the wind barriers and Vetiver hedgerows were scarified to form horizontal drills prior to the placement of brushwood.
FINN equipment coupled to a 4x4 truck was used for the hydroseeding application
Stabilised coastal dune at Rio Tinto Fort Dauphin Madagascar
Stabilised coastal dune, Fort Dauphin
Stabilised coastal dune,
Fort Dauphin
Scaevola taccada, interplanting on the Ehoalo sand dunes.
A Vetiver Plant removed from the Ehoala dune 8 months after planting.

Interesting to note the extent of the root system that grew on the infertile sandy dune material.
Construction of the haul road through the dunes of old forest area
<table>
<thead>
<tr>
<th>Material/Plant Type</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind Barrier Netting</td>
<td>36,000 m¹</td>
</tr>
<tr>
<td>Brushwood covering</td>
<td>380,000 m²</td>
</tr>
<tr>
<td>Vetiver plants propagated by local communities</td>
<td>3,000,000</td>
</tr>
<tr>
<td>Plant Vetiver Grass Hedge Rows</td>
<td>390,000 m</td>
</tr>
<tr>
<td>Areas Hydroseeded</td>
<td>48 ha</td>
</tr>
<tr>
<td>Quantity Commercial seed used</td>
<td>2,880 kg</td>
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<tr>
<td>Quantity Native seed used</td>
<td>480 kg</td>
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<tr>
<td>Lime Used</td>
<td>24,000 kg</td>
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<tr>
<td>NPK fertilisers</td>
<td>24,000 kg</td>
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<tr>
<td>Organic Supplement</td>
<td>24,000 kg</td>
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<tr>
<td>Soil Binder</td>
<td>480 kg</td>
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<tr>
<td>Mulch</td>
<td>12,000 kg</td>
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Before
After
Special Thanks to Kevin Walsh Surveyors for photographs supplied & their support during the construction process