

Seeds of Hope

Reforestation, Bamboo Cultivation & Land Slide Control

by
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Dominica is mountainous, seismically active and subject to frequent torrential rains. As a result, we have suffered from many landslides over the years. In Hurricane Dean of 2007, we lost a mother and son at Campbell. In 1976, the huge Bagatelle Land Slide left 8 dead and many more wounded. In 1997, a huge land slide in the heights of the Layou Valley blocked the Layou River for some time, and later led to flooding at Layou Village and Hillsborough when the naturally formed earthen dam was breached. Today, in heights of Carholm there is now a new lake, popularly christened Miracle Lake. Miracle Lake is almost 2.2 miles in area and a wonder to behold. It is the only naturally formed lake of its size to evolve in the Caribbean in the past 100 years. It has the potential to become a prominent and permanent tourist attraction if the proper civil and bio-engineering is done. Which brings us to bamboo and its role in bio-engineering: the use of natural products - such as vegetation - to create engineering solutions.

Bamboo is one of the fastest growing grasses and a great source of oxygen. It can be used as furniture, in housing and for clothing material. Some of its young shoots are ideal for salad making. The bamboo we see around Dominica today did not fall out of the sky. In the 1940s Soil Conservation Officer Wendell Christian relates that it was sown on slopes in places like Layou, Giraudel, Eggleston and along the Grandbay road to prevent soil erosion and land slides. My father was one of the recently demobilized soldiers from the British Army recruited in a special program by English Chief Forestry Officer Borer to tend to soil conservation. The plants they used, some imported from Asia, has a dense root network which is ideal for holding the soil. When last was such bamboo cultivation pursued? When have we ever seen a reforestation campaign when ordinary people take to the hills and valleys, seedlings in hand, to sow tree crops or bamboo to shore up the frequently sliding hills of our island home?

In countries like Nepal, which is as mountainous as Dominica, they have been experimenting with the use of grass and shrubs for the last two decades in roadside bioengineering. Various grasses, shrubs and trees have been used as bioengineering techniques by different organizations on a number of highway slopes in Nepal. When vegetative measures are combined with engineering measures, the end result can be effective for landslide protection and dramatic reduction of surface erosion, at relatively low cost and ensuring high sustainability.

Bioengineering control measures have been observed to be economically desirable and most effective for erosion control in degraded areas. Hence, planting local grasses, shrubs and trees represents sustainable use of vegetation along with engineering structures to increase slope stability against shallow landslides and to protect almost all slopes against erosion. On small sites, bioengineering techniques alone may be adequate. However, bioengineering is closely integrated with civil engineering structures. In many countries with landslide problems, brush layers, palisades, live check dams, fascines and vegetated stone pitching walls, large bamboo planting, turfing, site seeding and planting grass, shrubs, small trees, large trees, their spacing and plant growing techniques etc. have been used to preserve their soil cover.

Accordingly, the Dominica Academy of Arts & Sciences can focus on a partnership with our local department of agriculture, Public Works, and Forestry Division to revive these sound principles of soil conservation. Though we appear to be a very green island, human activity in the heights of Dominica have led widespread to deforestation. Many rivers are now shadows of their former selves. Many of us still have faint memories of the Roseau River in the 1960s where Silver Lake and Under Power were deep watering holes where bathers would jump from overhanging trees into 15 feet - or more - of water. Today, erosion continues unabated and many rivers are drying up while others resemble stone gullies. Soon, where left unchecked, such erosion will destroy our island where we do not act. As a result of erosion, tons of precious top soil built up over centuries of leaves falling to the ground and decaying, are regularly washed out to sea. Every time we see a local river brown with mud, we are witnessing the slow, but inexorable, washing away of our island.

Seeds of Hope:

Without our rich top soil being preserved, we cannot long survive. It is for that reason, we make this call to the members and affiliates of the Dominica Academy of Arts & Sciences to focus on what is a matter of survival. In celebration of the 30th Anniversary of Independence, each member of the DAAS at home - or visiting - can commit to planting some bamboo shoots at a roadside in coordination with the Forestry Department. A fruit tree can also be planted in a village or next to a local school, in coordination with the students who can tend to that tree long term. We will stake a suitable plastic plaque next to each planting to memorialize our contribution and inspire others to engage in similar collaborative effort. This is the time to put love of country before self or partisanship and tend to our very survival.

By this effort we can enhance the experimental analysis of mechanical properties of various root types, such as bamboo. We cannot be spectators to our fate and simply await the next big slide or hurricane, while we while away our precious time lamenting leadership that we fail to exhibit ourselves. **Mahatma Gandhi said we must first become the change we desire. With a modest individual donation of \$20.00 towards a seedling, for a National Reforestation Campaign - call it Seeds of Hope - we can preserve the tierra firma of Dominica.** Where we succeed we can pass on our worthy experience to other island states and so inspire them. The contribution sought from each of us is modest; the value great. **Each tree represents the birth of renewed hope in the victory of our development cause, and shows gratitude to God for the gifts bestowed. Shall we allow the ruin of Eden?**

As an academy dedicated to the dissemination of development oriented information, it is high time for the study of mechanical properties of roots, their role in landslide protection in the context of rapid development of roadside bioengineering technology nationwide. Considering the above facts a study is needed on an experimental analysis of strength of local grass and shrubs roots widely used for landslide protection in different countries. By such an effort, alongside, our own **Seeds of Hope Project**, we can reverse the washing away of our beloved island. And the bamboo and trees so planted can be an added boon to our economy where we can utilize them in industry.

Any persons desirous of being part of Seeds of Hope, can contribute to such a fund set up by the DAAS. We will work with local and international nurseries to get the bamboo and/or tree

seedlings. In that manner, every one of us can say we have made, or are making, a contribution to the **sustainable growth of Dominica.**