



**FUENTE DE VIDA FOUNDATION - "PROYECTO AGUA VIDA NATURALEZA" ["WATER LIFE NATURE PROJECT"]
CHOCOLATERA REPORT**

**This test was done in order to find out whether we can plant the most difficult place on Earth
with the Groasis Technology:**

Hard rocks, no soil - +39 °C – the highest sun radiation on Earth - eternal salted winds

You can see the planting of this tree here

<http://www.youtube.com/watch?v=zI4TgtDKxks&feature=c4-overview-vl&list=PL5MDcgMmY2CWxN3s3e1pxfctPiY1e5oga>

INTRODUCTION.-

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Salinas is one of the main cantons of the Province of Santa Elena, with a population of around 34,719 inhabitants and an urban area divided into four parishes. It is located in the western most part of the country, forming part of the Santa Elena Peninsula's urban conglomerate.

The climate in this area is arid desert due to the fact that a section of the Humboldt Current flows just offshore the peninsula. The average annual precipitation varies from 125 to 150 mm, and it is considered one of the driest cities in Ecuador. It has two seasons: rainy and dry. The rainy season occurs between the months of January and April and the dry season occurs in the remaining months of the year. During the rainy season the recorded precipitation is almost 90% of the total annual rainfall. Temperatures range from 21 to 33 °C.

Located within the Salinas Naval Base, 163 kilometres from the city of Guayaquil, Salinas is home to La Chocolatera, one of the most popular sites for local and foreign tourists and the most protruding point along South America's Pacific coastline. Here currents converge and lift sand up from the seafloor, giving the sea the chocolate brown hue for which it bears its name.

This makes for a unique, colourful display, as the two sea currents produce a clashing of waves against the rocks, their waters filtering the intense sunlight to create multiple rainbows.

This site is also recognized as an ideal natural space for ecotourism, where divers can observe hundreds of tropical fish. Sea tours, available between the months of June and September, are a great way for visitors to enjoy themselves by observing the humpback whales that migrate each year from Antarctica to Ecuadorian waters, where they mate and raise their young.



OVERALL OBJECTIVE:

- Test the adaptability of Groasis Waterboxx Technology, recreating Mother Nature to solve the issue of tree planting in deserts, eroded and rocky areas, restoring vegetation cover and rendering them productive for timber, fruit and vegetables.

SPECIFIC OBJECTIVE:

- Disseminate Groasis Waterboxx Technology by posting information about it in the area, considering that the place is frequented by local and foreign visitors.
- Contribute to the development of ecotourism in the area through the use of Groasis Waterboxx Technology.

GEOGRAPHIC LOCATION AND DESCRIPTION OF LA CHOCOLATERA

La Chocolatera is located on the most protruding point of the Santa Elena Peninsula and the South Pacific. The average temperature is 27°C with a relative annual humidity of 85.9%. Solar radiation reaches a maximum of 1,200 to 1,300 W/m² during rainy periods with clear days and 700 to 900 W/m² during the dry season with cloudy days. The wind speed is 20 km/hour. Here the air has a salinity content of 32 to 35% and rainfall of 125-150 mm.





METHODOLOGY

Visits are biweekly or monthly, during which two specialists are assigned to their respective monitoring.

DETAILED ACTIVITY DATES

20 JUNE, 2012

SURVEY OF THE AREA

On this day a survey of the area was conducted where a trial demonstrating how Groasis Waterboxx can adapt to different desertic terrains was to be carried out.



Survey of the site.



22 JUNE, 2012

PLANTING OF TREES IN LA CHOCOLATERA

We proceeded to plant trees in La Chocolatera, taking into consideration a species native to the province, the Cascol tree (*Latin name: Libidibia corimbo*), to test its adaptability to this environment, knowing that the area is completely **saline** and the terrain is **rocky**, without soil.



A hole dug in the definitive site



15 cm deep, 60 cm wide hole



Filling of 40 litres of water



Tree planting



COLLECTION OF DATA
12 OCTOBER, 2012

LOCATION OF SIGNAGE IN LA CHOCOLATERA

In order to guide local and foreign visitors, the Municipality of Salinas placed a sign showing how to get to the La Chocolatera. In order to raise awareness of the use of the innovative Groasis Waterboxx Technology, the "Agua Vida Naturaleza" ["Water Life Nature"] project staff placed an explanatory technical sign, helping to improve the image of the site for tourists.



Sign location



18 JANUARY, 2013

TECHNICAL VISIT

The tourist site was visited to observe the development of the Cascol tree. It displayed good adaptability, although the larger branches were affected by sea breezes. The tree continues to grow despite these conditions.



Development of the Cascol in La Chocolatera

28 MAY, 2012

PRUNING

The Cascol tree was pruned and the dry lateral branches that were affected by the salinity of the site were removed in order to focus the tree's energy on the longitudinal growth in both the aerial parts and the roots.



Pruning of the Cascol tree.



7 JUNE, 2013

MEASURING FOR THE BANNER CHANGE

The above mentioned sign located at the site was found to be deteriorated (rusted bolts) so the banner was measured for a subsequent change.



Measuring the banner to change the sign at La Chocolatera.

19 JUNE, 2013

PLACEMENT OF BANNERS

The stakes were sanded and painted. Then a new banner was placed as the old one was in poor condition. This banner shows the process from planting to the development of the plants with the Groasis Waterboxx system.



Polish, paint and place the new banner.



26 JULY, 2013

OBSERVATION

We observe that the Cascol tree planted in La Chocolatera is adapting well to the area. Although the new shoots appear to be slightly affected by sea breezes, the tree displays good foliar development.



Photo of Cascol tree.

30 AUGUST, 2013

MONITORING

We monitor the Cascol tree. Considering that it is located in an extremely saline environment with rocky soil, this tree is developing well.



Good adaptability



13 SEPTEMBER, 2013

VISIT TO THE TREE

Continuing with the planned visits to La Chocolatera, the Cascol tree was monitored and found to be in good condition, even though its location is in an area with excessive salinity. Foliar development was observed, but little as this native species is slow-growing.



Cascol tree in La Chocolatera

17 OCTOBER, 2013.

TECHNICAL VISIT

The Cascol tree located in the most protruding point on the Santa Elena Peninsula (Chocolatera) displays slow foliar development. This is due to the edaphoclimatic conditions of the area (soil and air salinity, strong winds, rough soil).



Foliar development



GROUP OF SPECIALISTS

The staff of the "Agua Vida Naturaleza" project collaborating with Mr. Hoff on his mission to reforest the world with the innovative Groasis Waterboxx Technology, helping to restore the environment by planting trees, thus lowering CO2 levels which are increasing each day worldwide.



Staff of the "Agua Vida Naturaleza" project



CONCLUSIONS AND RECOMMENDATIONS:

This model of ecological planting without damaging the capillarity in the soil favours the development of the tree's roots and contributes to the improvement of ecotourism in the area by bettering the environment. With Groasis Waterboxx Technology we can plant in arid zones with prolonged periods of drought, using as our reference the fact that the box naturally captures water through condensation and rain. In temperate climates, up to 30% faster plant growth can be achieved, protecting the plants from rodents and weeds that can cause damage. It also maximizes land use by making inorganic terrains productive, giving them a new economic role for their owners.

The Technology has been scientifically proven in similar places. For example in the Sahara desert they conducted studies on adaptability, with a success rate of up to 90% compared to 10% for plants that did not survive in these edaphoclimatic conditions.

The planting of this tree can be seen in the video on <http://youtu.be/zl4TgtDKxks>

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