Tree planting preparation (Sadhana Forest method)

Recycle material and use low-tech techniques to plant trees to:
• Improve irrigation efficiency, • Improve young tree survival rate in harsh environment, • Rehabilitate the Dry Evergreen Tropical Forest (in this case near Auroville, India). Rehabilitation of the forest offers many other benefits such as soil rejuvenation, life-friendly microclimate development, biodiversity enhancement, water retention and so much more.
"If we could only understand what a tree does for us, how beneficial it is to life on earth, we would (as many tribes have done) revere all trees as brothers and sisters." (B. Mollison)

Difficulté **Facile** | Durée **1 heure(s)** | Catégories **Alimentation & Agriculture, Recyclage & Upcycling**

Coût **0 EUR (€)**

Sommaire

Introduction

Acknowledgements

The seek for timber and firewood, fights between British and French colonial troops and some government incentive for cash crops for Europe in the early 20th century depleted the native Dry Evergreen Tropical Forest in the region of Pondicherry. Less vegetation coverage combined with heavy rain episodes lead to massive topsoil erosion and transformed the luxuriant ecosystem of the plateau into a dry savannah. This severe degradation of the ecosystem impacted the biodiversity, reduced the water underground levels, reduced fertility, increased surface temperature, degraded the livelihoods and eroded the culture of nature stewardship of the local communities.

Our solution and its expectable benefits

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Matériaux

- Parts:
  - (1) Small-diameter pipe (see procedures for details),
  - (1) Rope (use biodegradable rope, e.g. coconut fiber rope),
  - (1) Plastic bottle (recycle);
- Consumables:
  - Soil (e.g. topsoil from other grown trees),
  - Humanure compost,
  - Urine-activated charcoal,
  - Water,
  - Mulching material (corn stalks, rice hulls, hay, straw, dry leaves, Chopped Rameal Wood (CRW, a.k.a. “Bois Raméal Fragmenté” (BRF)) …),
  - Glue (for plastics, e.g. epoxy)

Outils

- Tools:
  - (1) Knife,
  - (1) tube (probably 40 cm diameter);

Étape 1 - Preliminary requirements

Étape 2 - Analyze the topography of the terrain / identify slope

Étape 3 - Define where you want to plant the tree

Étape 4 - Build a mound

1. Install the tube on the planting zone,
2. Dig dirt from uphill part of the planting zone,
3. Add the dirt around the tube to form a mound (looks like a volcano),
4. Add humanure, urine-activated charcoal and soil (e.g. topsoil from other grown trees) in the tube;

Étape 5 - Dig a hole in the soil mix (humanure, urine-activated charcoal, topsoil) in the tube

> Make sure that the hole is big enough. The bottle-irrigation system and sapling with its root system must fit in the hole. If needed, make the hole bigger.

Étape 6 - If not done yet, build the bottle-irrigation system

1. Collect the material:
    1. Get a plastic bottle from trash, wasteland or nature directly,
    2. Get a rope,
    3. Get a pipe (ideally same diameter as the rope, length < 10 cm; adapt the procedure in accordance with locally-available material);
2. Assemble the rope and the pipe:
    1. Install the rope inside the pipe,
    2. Make a knot on the rope at the first end of the pipe,
3. Make a knot on the rope at second end of the pipe,
4. Assemble the pipe and the plastic bottle:
    1. Measure the diameter of the pipe,
    2. Make a hole the size of the diameter of the pipe at the bottom of the plastic bottle,
    3. Install the pipe + rope assembly in the bottom of the plastic bottle,
    4. Use glue to assemble the pipe + rope assembly with the plastic bottle,
    5. Wait for the glue to dry;

> Make sure that the knot is bigger than the diameter of the pipe. If not, make more knots.

> Make sure that both knots are tight against the ends of the pipe. The objective is to use capillarity to irrigate the tree over a long period of time. If the knots are not tight against the ends of the pipe, the water might leak from the bottle. If the water leaks from the bottle, the bottle will lose water quicker and the tree will receive water for a shorter period. Capillarity is a physical phenomenon. As a result: if the moisture level in the soil is the same as in the bottle, water will not move from the bottle to the soil, irrigation will stop. If the moisture level in the bottle is lower than the moisture level in the bottle, water will move from the bottle to the soil, irrigation will flow.

Étape 7 - Fill the plastic bottle with water to make sure that there are no leaks

1. If the plastic bottle leaks, add glue,
2. If the pipe leaks, make a tight knot,
3. Else: good job, you will make your tree happy 😊
4. Tighten the cap to close the bottle;

Étape 8 - Assemble the bottle-irrigation system with the sapling

> Make sure that the rope from the bottle-irrigation system goes around the root system of the tree.

Étape 9 - Apply the “plant a tree” procedure to install the sapling and the bottle-irrigation system in the tube in the mound

Tree planting (Aranya Agricultural Alternatives method)

Étape 10 - Remove the tube

Étape 11 - Frequently examine the moisture level

Notes et références

FAQ & Troubleshooting?

This procedure seems so simple! Is it applicable?

There are as many tree planting procedures as tree planters… What I understand is that sometimes, some people over-complicate procedures and stick to tricky standards without really understanding the reason behind those standards. What we learned during our PDC is to observe and interact with nature. As Narsanna Ji told us: “no one teaches a seed how to grow.”, same goes for trees! Trees grow in forest without engineered standards to support their growth. No need to overcomplicate things here. Nevertheless, your environment might be severely degraded and not friendly to your young tree… You might want to consider succession and pioneers: what can grow first in your harsh environment and benefit to other species later? Feel free to read our blogpost about the beautiful reforestation effort at Pebble Garden in Auroville, India to acknowledge how the grow soil and transformed a desert in a tropical evergreen forest without any external input, with nature observation. If your environment is severely degraded, you might want to prepare the tree planting zone. Feel free to refer to the procedure that Sadhana Forest recommends for severely degraded areas in Dry Tropical climates .

What about watering?

We recommend bottle irrigation or clay pot irrigation. Refer to the procedure about clay pot irrigation system for more information about this solution. Refer to the “Tree Planting Preparation (Sadhana Forest method)” procedure for more information about bottle-irrigation system.

Transplantation

Bear in mind that not all trees can be transplanted. Ask you local tree lover / tree expert for advice. In the nursery, we recommend you plant a lot of seeds in beds to select the best saplings for transplantation in pockets. This should allow you to increase the survival rate of young trees and, this should allow you to (re)use less pockets.

Go further…

Please share with us with your remarks, comments, improvements, achievements, etc.
"Reforesting the earth is one of the few tasks left to us to express our humanity." (D. Holmgren)
DIY tutorial “Tree planting (Aranya Agricultural Alternatives method)” procedure: http://wikifab.org/wiki/Tree_planting_(Aranya_Agricultural_Alternatives_method)
DIY tutorial “Clay pot irrigation system (Aranya Agricultural Alternatives method)”: http://wikifab.org/wiki/Clay-pot-irrigation_system_(Aranya_Agricultural_Alternatives_method)
Blogpost about Pebble Garden: https://sustainable-autonomy.weebly.com/blog/discover-auroville-pebble-garden
Blogpost about the Permaculture Design Course at Aranaya Farm: https://sustainable-autonomy.weebly.com/blog/pdc-at-aranya-farm
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