

## Establishment & Maintenance of Tree Seedlings



Proper establishment and maintenance of forest trees support efforts to reforest urban, peri-urban and rural denuded landscapes. Trees provide environmental and social benefits and promote cleaner and healthier living spaces. Adherence to specific guidelines for planting, such as the use of silvicultural prescriptions, as well as the development and execution of maintenance schedules, enhances the survival of planted seedlings in urban and peri-urban spaces.

### Duration

Results of planting tree seedlings can be seen in 3 to 5 years.

### Place of Implementation

- Urban and rural areas which have been subject to forest degradation or deforestation.
- Places where intervention is needed to avert destruction of an entire ecosystem, improve environmental conditions, promote sustainable forest use, and foster community-based urban forest conservation.

### Threats Addressed

Drought	Loss of urban tree cover
Increased Temperatures	Urban food security
Forest Fire	Urban food security
Loss of Forest Cover	Spread of Pests
	Phenological Changes

### Social, eco-systemic and economic benefits

- **Builds environmental awareness and community education**  
The process of planting trees and rehabilitating forest areas fosters greater environmental awareness in communities as well as sensitivity to climate change.
- **Income opportunities for communities**  
Planting tree seedlings in urban spaces will lead to development of fruit trees and food gardens which provide nutritious sustenance and allow community members to earn an income from the sale of fruits and their byproducts.
- **Improves quality of life**  
Providing shade in urban spaces supports climate regulation and improves air quality. Planting trees beautifies communities, thereby contributing to an improved quality of life.
- **Improves biodiversity**  
Planting trees supports improved urban biodiversity and a healthy ecosystem. Trees attract birds, bees, and other wildlife that have important ecosystem functions which support quality of life for communities.



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## Main Climate Impacts & Threats Addressed



### Flooding

Establishment of forest tree seedlings over time stabilizes the soil, thereby preventing runoff and reducing flooding.



### Erosion

Soil stabilization mitigates the erosion effect of floods during heavy rains.



### Landslides

Soil stabilization mitigates the erosion effect of floods during heavy rains.



### Undermining Urban Food Security

Planting tree seedlings helps to increase food security especially in socially vulnerable, low-income urban areas, providing a cost effective source of healthy, nutritious food.



### Decrease in water availability and quality

Planting trees helps to improve water quality in urban and peri-urban areas. Trees prevent runoff and erosion, resulting in better water quality and availability.

## Implementation Stages

- 1 Identify the areas for intervention and establish access and usage rights among affected communities.
- 2 Conduct on the ground assessments and surveys using Global Positioning System (GPS) technology.
- 3 Generate silvicultural prescriptions for planting sites, detailing the type of seedlings, how many are needed, and how seedlings should be planted and maintained.
- 4 Design a forest rehabilitation and maintenance plan which takes into account the conditions of planting sites, species of seedlings, the needs of surrounding communities, and aesthetic considerations.

### References

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Webber, Mona, Hilconida Calumpong, Beatrice Ferreira, Elise Granek, Sean Green, Ruwa Renison and Mario Soares, 2016. "Mangroves." In *The First Global Integrated Marine Assessment: World Ocean Assessment I*, edited by United Nations, 877-886.

## Important Factors to Consider

- Suitable species: Planting seedlings without appropriate silviculture guidelines can lead to loss of seedlings due to introduction of species which are not suitable for a specific area or ecosystem.
- Community engagement: Engaging and involving the community are critical to the success and sustainability of forest establishment and maintenance, especially in the case of heavily used, urbanized areas in Kingston and St. Andrew.
- The time when seedlings are planted: Planting is best done during the rainy seasons of April to June, and September to December.
- Preventing forest fires: Fire lines or breaks should be established at strategic points during the dry seasons (January to March & July to August) to reduce the effect and impact of fire occurrences post-planting. Fire lines should reflect an area void of all vegetative fuel biomass to slow the progress of forest fires, and the width of these lines should be between 2.5 and 3 metres. Fire lines should be continuously maintained to ensure protection during the dry months.



## Lessons Learned

In areas where there is less rainfall or areas which experience prolonged dry conditions, consideration could be given to hiring personnel to water seedlings.

## How To Gauge Impact

Impact is gauged by i) seedling density (number), ii) survival rate (percentage) and iii) mortality rate (percentage).

## Costs and inputs

Establishment and Maintenance of 1 ha Tree Seedlings	Cost in USD
Equipment & Tools	\$24,464.00
Labour (planting and maintenance)	\$45,678.99
Transportation	\$23,870.63
Seedling Cost	\$30,445.50
Administration Cost	\$12,674.88
<b>Total</b>	<b>\$137,134.00</b>