AGROFORESTRY AND URBAN FORESTRY GUIDELINES

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Outline of the Presentation

- Goal of the sector
- Forestry sector overview
- Forests Types and Ownership
- Strategies
- Agroforestry Technical guidelines
- Urban Forestry Guidelines

Goal

To make the forestry sector one of the bedrocks of economy and national ecological balance for sustainable benefits of the society.

Forestry Sector overview

- One of the targets of the vision 2020 , EDPRS II or NST1 is to cover 30% (714,102 ha) of the total National dry land by forests.
- The current forest cover is equivalent to 29.8 % of which:
  - Forest plantation occupies 17.7 % (426,633 ha) and
  - Natural forests ocupies11.9% (283,128 ha).
- Special attention to improve their management through rehabilitation and restoration of degraded lands is vital

Forest types

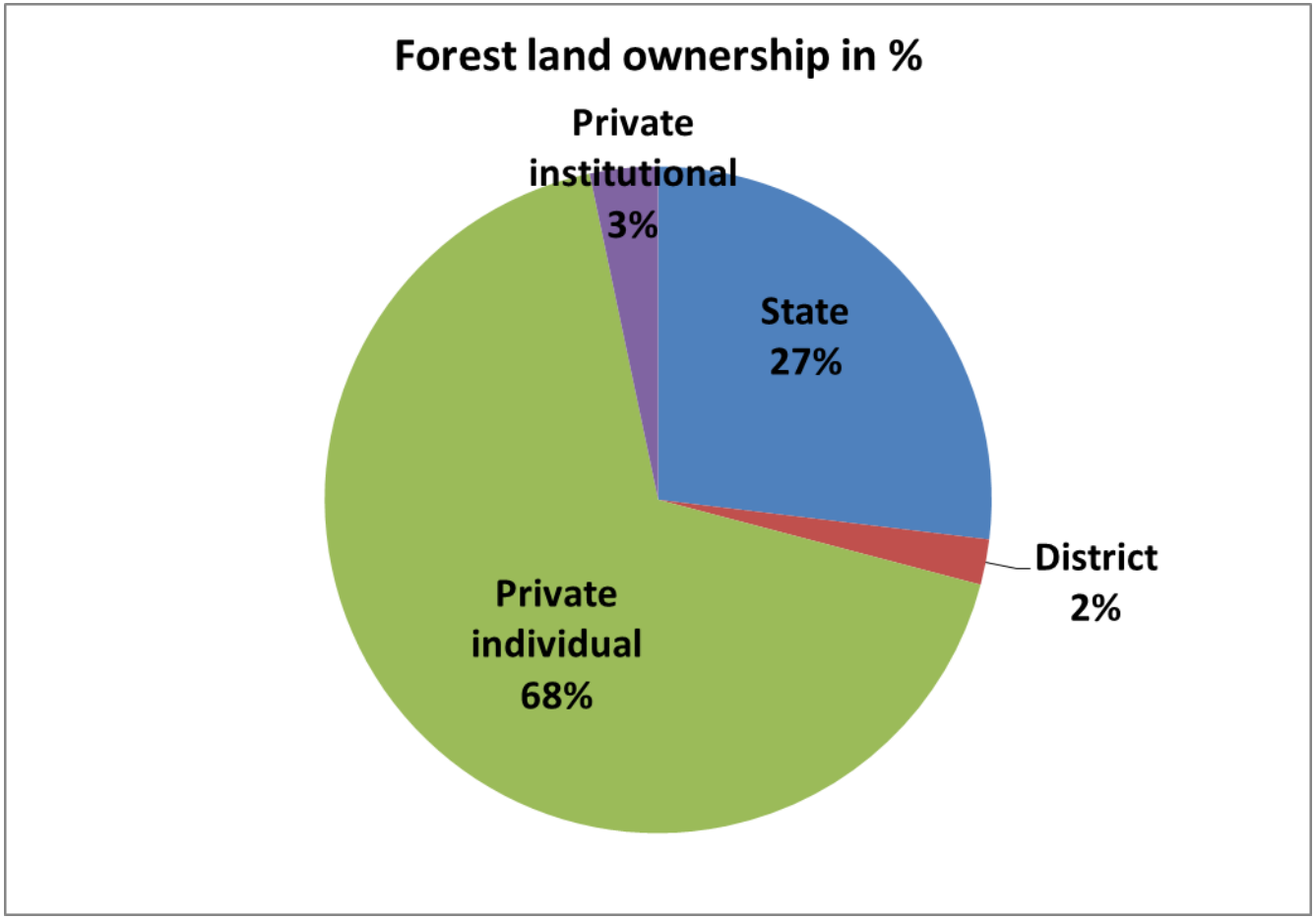
Forest Plantation

- Plantation forest is a manmade forests
- It covers **17.7** % of the national land area totalling **704,997 ha**
- Plantations include State, District and Private forests

Natural Forests

- Naturally grown forests
- It covers **11.9**% of the national land area equivalent to **283,128 ha**
- It include gazetted parks, shrubs and small natural forests

Forest cover by ownership



Strategies to improve Forestry Management

- Strengthening and enforcing policy frameworks
- Engaging private investors
- Adequate implementation of the land use master plan without compromising the forest dedicated lands
- Raising awareness and capacity building
- Establishment and implementation of the FMUS
- Elaboration and implementation of Agroforestry and urban forestry guidelines

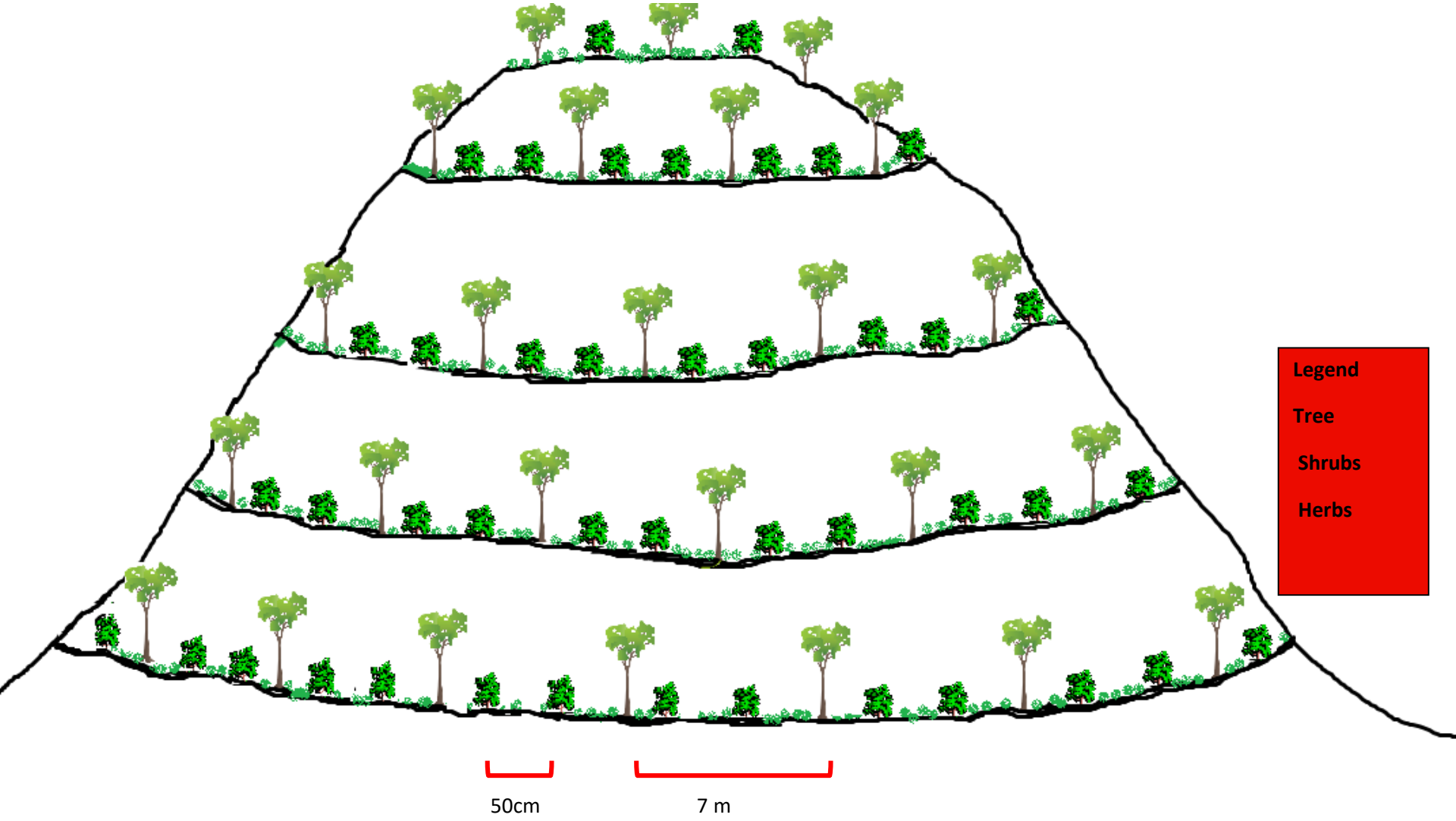
AGROFORESTRY TECGHNICAL GUIDELINES

- Agroforestry is defined as the land use system that integrates trees on farms or agricultural landscape for increased social, economic and environmental benefits for land users.
- In Rwanda, agroforestry systems are managed by smallholders to achieve multiple benefits such as soil erosion control, fuelwood, stakes for climbing beans, timber, fruits and fodder
- They take various forms such as hedgerows (trees planted in row along contour, often terraces), intercrops (trees scatted on farmland and in pastures or alley cropping), home gardens, and boundary planted trees.

Contour lines design

Slope Category	**Vertical interval**	**Interval between contours**	**Number of trees per ha**	**Number of shrubs per ha**	**Provinces**
0-16%	2 m	m12.5 - m40	114-35	1600-500	East and Kigali
17-40%	3 m	m 7.5 - m12.5	190-114	2666-1600	Southern
41-60%	4 m	m 6.6 – m7.5	216-190	3030-2666	North and west
≥ 60%	Forest	Dense Forest	Dense Forest	Dense Forest	

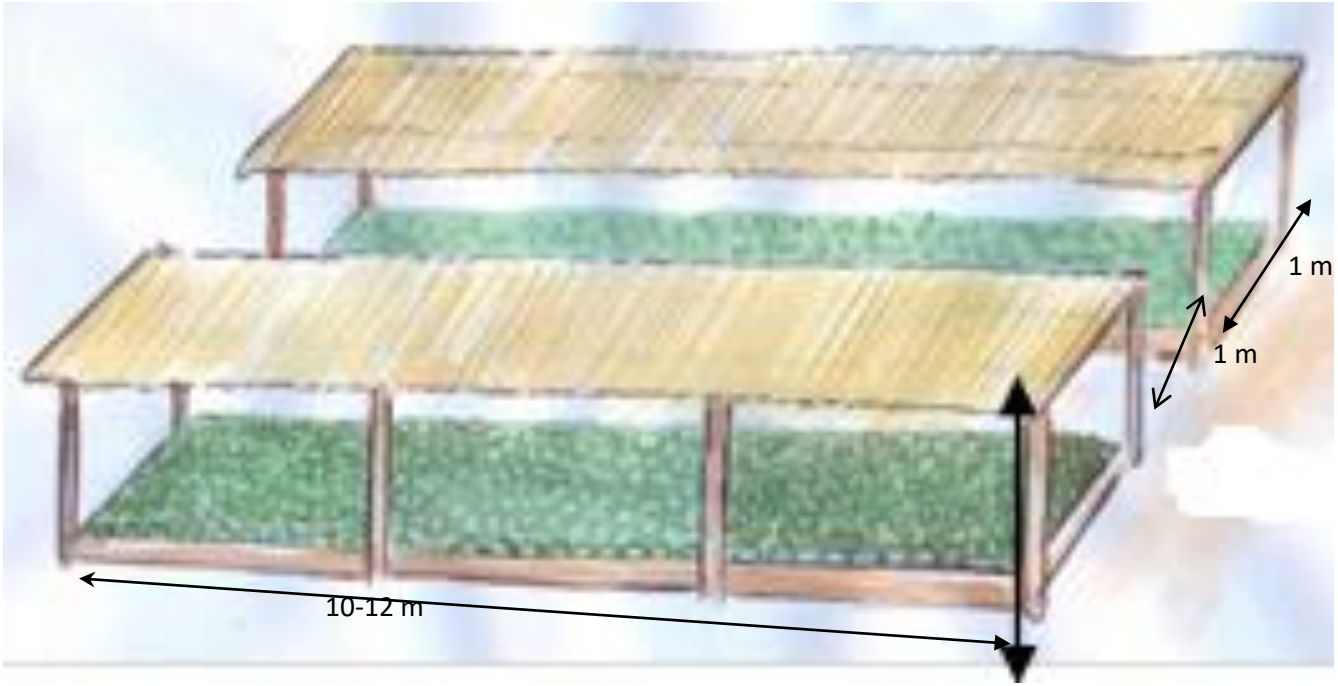
Contour lines design



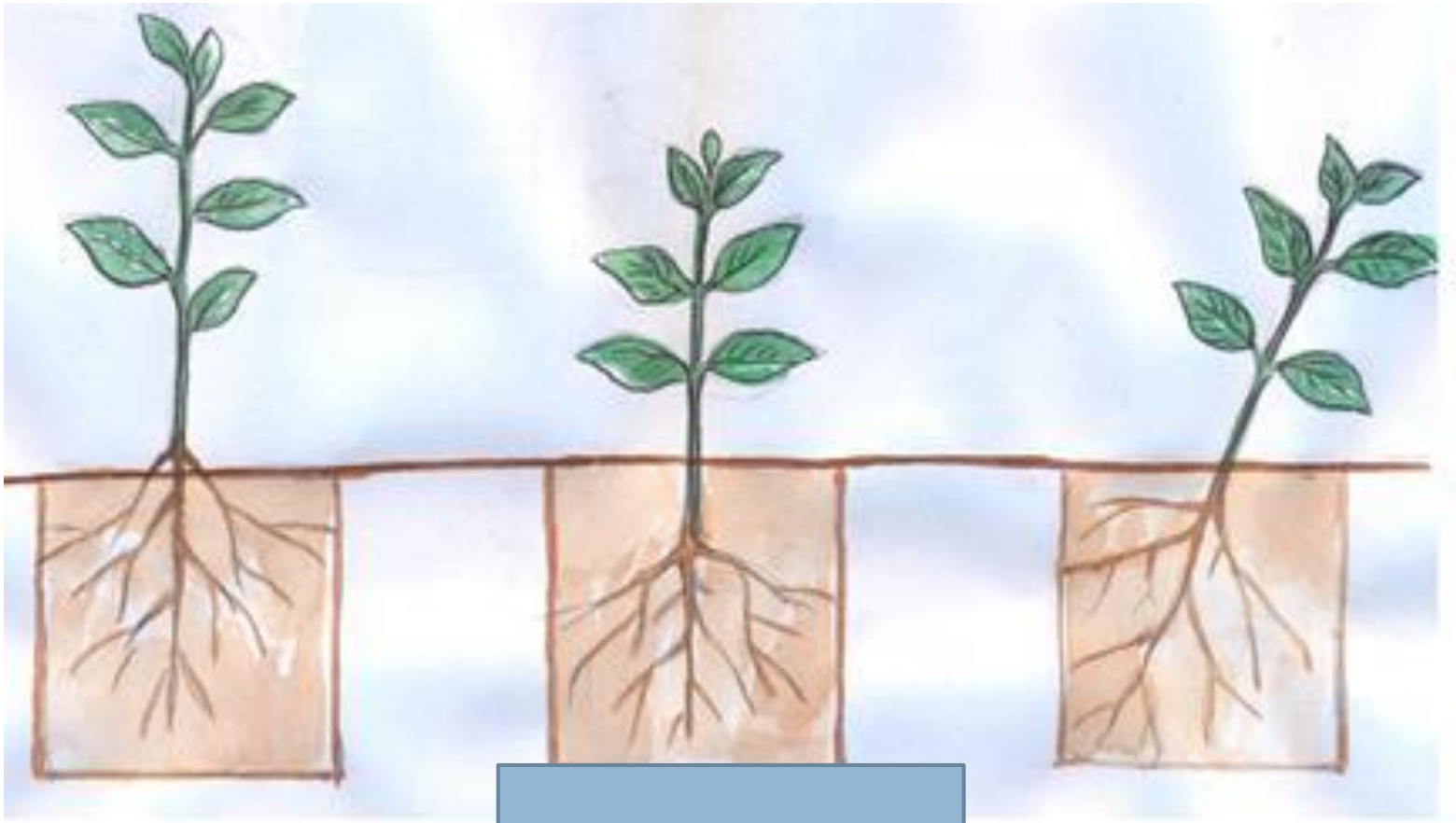
Planting techniques

- Trees and shrubs shall be mixed along the contour lines:
- The hole size should be 30cm x 30cm x 30cm
- For perennial trees, the spacing between two trees will be 7 m
- For shrubs, the spacing will be 50 cm between two shrubs

Nursery bands structure



Right way of planting trees



Right way of planting

Urban Forestry

- Urban forestry is defined as networks or systems comprising all woodlands, groups of trees, and individual trees located in urban and peri-urban areas
- They include forests, roadside trees, trees in parks and gardens, trees in roundabouts, trees in homegardens and trees in civic premises.
- urban forestry is the practice of managing urban forests and trees to ensure their optimal contributions to the beautification, ecological and economic well-being of urban population.

Why is urban forestry important for Rwanda?

We should plant and maintain urban forests and trees to make our Cities:

- **Greener:** Trees and forests are the backbone of the green infrastructure and are key actors in the theatre of urban landscape.

- **Healthier:** Trees and forests in cities provide ideal settings for outdoor recreation and relaxation activities which in turn, help to prevent and treat non-communicable diseases while reducing stress and boosting mental health.

- **Cooler:** On hot days, urban forests and trees are a breath of fresh air. They provide shade and natural cooling effect. They also mitigate the thermal extremes of the built-up urban environment much more effectively than air conditioning. Urban forests and trees have the potential to reduce the vulnerability of cities to climate change.

Objectives

- This guideline is developed to support decision makers, practionners and field technicians in greening Kigali City and secondary Cities

Specific objectives

- To guide sustainable management of urban forests and trees to maximize benefits to people living in the cities;
- To Provide technical guidance related to the greening of Kigali City and secondary cities;
- To recommend tree species for urban forestry in Rwanda

Urban forests Techniques

Road/street sides

- Trees planted along both sides of the roads, streets or avenues. These trees should conform to the following standards:

- **Rooting system:** deep
- **Tree height:** 5-10 m
- **Foliage:** green and broad leaves

Urban forests Techniques Cont'd

- **Branches:** flexible and resilient (not brittle), no self-pruning trees.

- **Form:** single-stemmed trees with a pyramidal form are preferred for roadside planting Trees with rounded, conical, oval or slightly spreading crowns should be periodically pruned to ensure good structure and to provide clearance.

- **Longevity:** long-lived tree species should be the first choice for planting since they provide for a lasting effect at least until the renovation period of the roads/street.

Urban forests Techniques Cont'd

Diameter of mature canopy	**Typical spacing**	**Example of tree species**
3 - 6 m	3 - 6 m	Royal palm, *Filicium deficiens* (Thika palm), *Brachychton acerifolius*
6 - 9 m	6 - 9 m	*Spathodea companulata*, *Delonix regia*, *Polyscias fulva*

Urban forests Techniques

- Planting trees in a single row on each side of the road/street and/or in the middle of the road. Depending on topographic conditions, double row planting of trees in triangular arrangement should be done;
- Tree planting not recommended in 1-2 m from the power lines. Trees and shrubs should be kept shorter through pollarding to avoid power outage, surges, fire and other damages;
- Use exotic and native tree species, including flowering shrubs and trees to the greatest extent;

Urban forests Techniques

- Species diversity is encouraged as a diverse plant mix is less susceptible to disease;
- Design for and maintain sight distance for motorist, bicycle, and pedestrian traffic for security purpose;
- Place trees and shrubs at a minimum of 2 m from the edge of the road/street;
- Locate trees away from structures to avoid operational conflicts and the need for excessive pruning;
- Do not locate trees that will interfere with traffic signs, signals, or lighting.

Roadside trees example

Roundabouts

Roundabouts

- Landscaping of roundabouts should designed to ensure that vehicles can observe the signing and shape of the roundabout as they approach and have adequate visibility for making decision within the roundabout.
- The appropriate planting zones within a roundabout and the types of landscaping of each zone are described below:

Round about design/Sonatube

Recreational parks

- Ornamental and shade trees should be planted in blocks or at dispersed at wide spacing from 3 m to 12 m depending on tree species.
- Tree species with cultural values should be given priority e.g. *Dracaena spp, Erythrina abyssinica, Ficus spp.*,
- Trees should also be planted along both sides of walkways within the park;
- Flowering plants could also be incorporated within the park's landscape for beautification

Example of recreational park

Homegardens trees

- Trees in the neighborhood of houses and buildings are important for aesthetics, provide food (fruit), act as windbreak, provide shade and regulate climate.
- These trees need to be a bit far from structures to avoid damages by crown and root systems.
- small and medium-sized trees should be planted but regular root and branch pruning may be required to prevent these risks.
- Among the number of trees to be planted in homegardens, every household should plant at least three fruit trees.

THANK YOU