



Genetic Resources Research Institute

Sustainable harvesting of pesticidal/medicinal plants

ICRAF

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Background

- Rural communities use knowledge about plants passed down for generations to protect field crops, stored grain and livestock from damage caused by pests and diseases
- This knowledge presents an effective, low cost, sustainable and environmentally friendly pest management strategy
- Natural products are a goldmine whose potential is yet to be fully exploited

Some of the documented Botanicals

- *Acalypha indica*
- *Ambrosia maritima*
- *Antidesma membranaceum*
- *Argemone mexicana*
- *Artemisia afra*
- *Avicennia marina*
- *Azadiracta indica*
- *Balanites aegyptiaca*
- *Bobgunnia madagascariensis*
- *Boerhavia erecta*
- *Boswellia spp.*
- *Bridelia atroviridis*
- *Cannabis sativa*
- *Chamaecrista nigricans*
- *Chasmanthera dependens*
- *Chenopodium ambrosoides*
- *Chrysanthemum spp.*
- *Tagetes minuta*
- *Tephrosia candida*
- *Tephrosia macropoda*
- *Tephrosia vogelii*
- *Thevetia peruviana*



Argemone mexicana

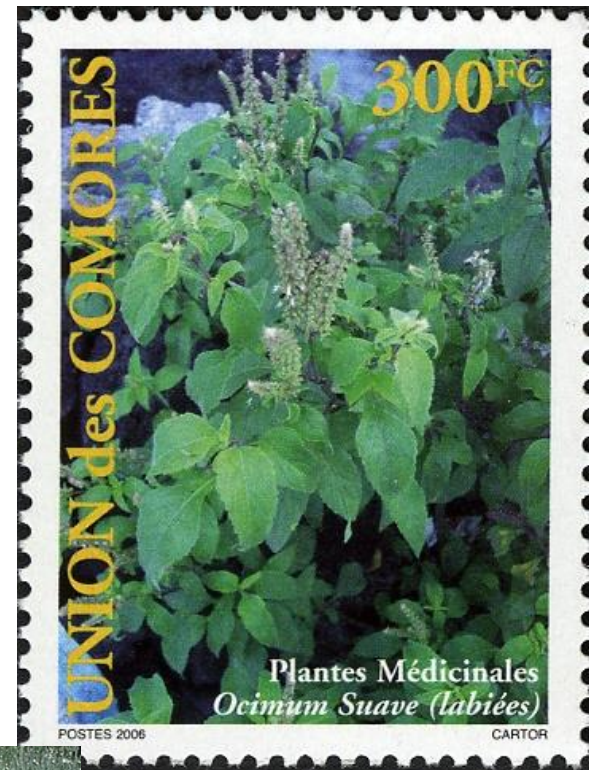


Candle bush

- *Chrysanthemum cinerariifolium*
- *Cissampelos mucronata*
- *Cissampelos owariensis*
- *Cissampelos pareira*
- *Cissus quadrangularis*
- *Clusia abyssinica*
- *Cocculus pendulus*
- *Commicarpus plumbagineus*
- *Commiphora guidotii*
- *Commiphora molmol*
- *Cordia myxa*
- *Croton jatrophoides*
- *Datura metel*
- *Dolichos kilimandscharicus*
- *Erythrophleum suaveolens*
- *Euphorbia candelabrum*
- *Euphorbia heterophylla*
- *Euphorbia hirta*
- *Euphorbia lathyris*
- *Ocimum suave*
- *Ocimum gratissimum*
- *Tithonia diversifolia*
- *Uapaca kirkiana*
- *Vernonia amygdalina*
- *Ximenia americana*



Ocimum gratissimum



Ocimum suave



Chrysanthemum cinerariifolium

- *Euphorbia pseudograntii*
- *Euphorbia shimperiana*
- *Euphorbia tirucalli*
- *Flueggea virosa*
- *Griffonia simplicifolia*
- *Jatropha glauca*
- *Melia azedarach*
- *Mostuea brunonis*
- *Ocimum basilicum, suave*
- *Petiveria alliacea*
- *Phytolacca dodecandra*
- *Plumbago zeylanica*
- *Psiadia punctata*
- *Schizogygia coffaeoides*
- *Securidaca longepedunculata*
- *Senna alata*
- *Senna sophera*
- *Solanum panduriforme*
- *Spondias preusii*
- *Swartzia madagascarensis*
- *Tagetes minuta*
- *Tephrosia vogelii*



Tagetes minuta



Tephrosia vogelii

Parts harvested

- Roots
- Leaves
- Fruits
- Bark



Ricinus communis

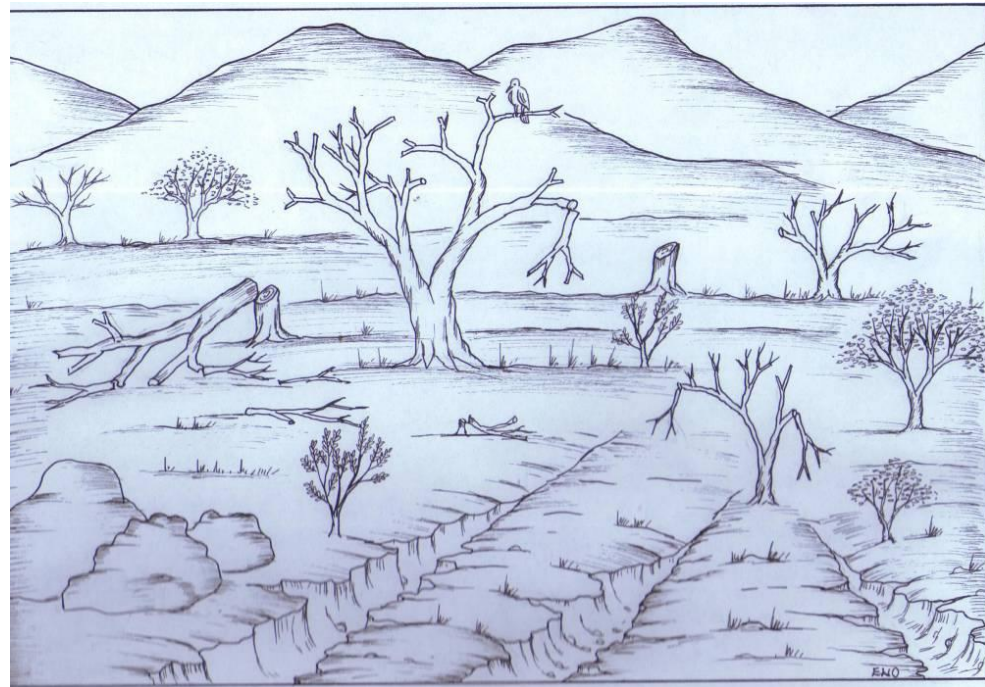
What is sustainability

Utilizing in such a way that you meet the present needs without compromising the ability of future generations to meet their own needs



Why sustainable harvesting

- Posterity – avoid extinction
- Continuously require the resource – sustainable supply
- Need to preserve indigenous Knowledge
- Other ecosystem services



Drivers for non-sustainable harvesting

- Commercialization leading to increased demand
- Loss or non-appreciation of cultural values and practices:
 - Taboos
 - Religious controls
 - Seasonal and social restrictions

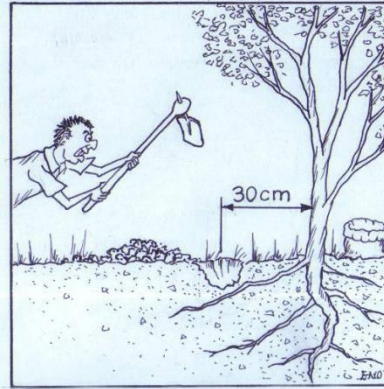


Sustainable harvesting guidelines

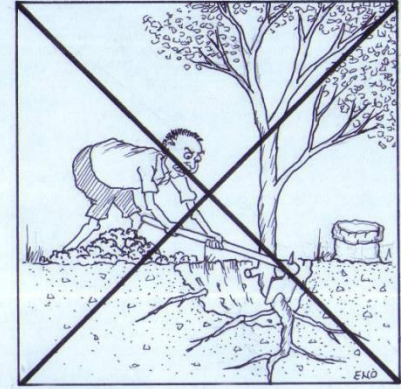
- Important factors to consider to avoid wastage:
 1. When to harvest:
 - Optimum time – quality & efficacy
 - Weather conditions – avoid deterioration of material
 2. What to harvest:
 - Species identification
 - Healthy and well developed material
 3. How to harvest:
 - Avoid depletion
 - Ensure re-growth
 4. Nature and quality of equipment and containers

Guidelines for root harvesting

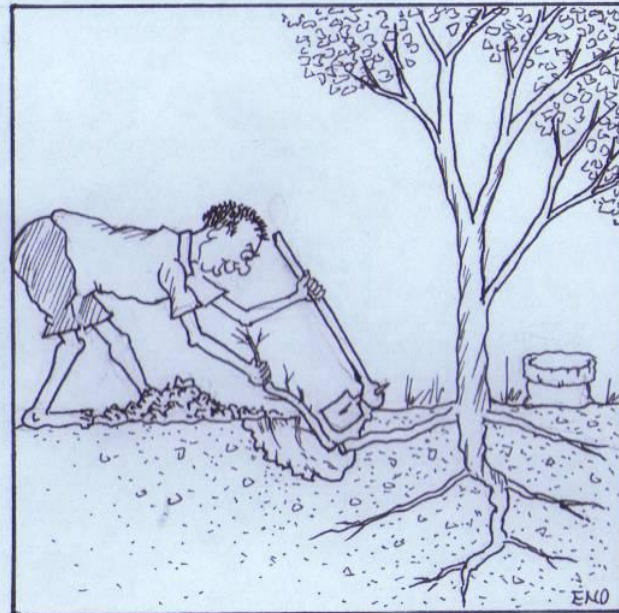
- Dig away from tap root
- Never sever tap root
- Collect lateral roots only
- Cover the hole



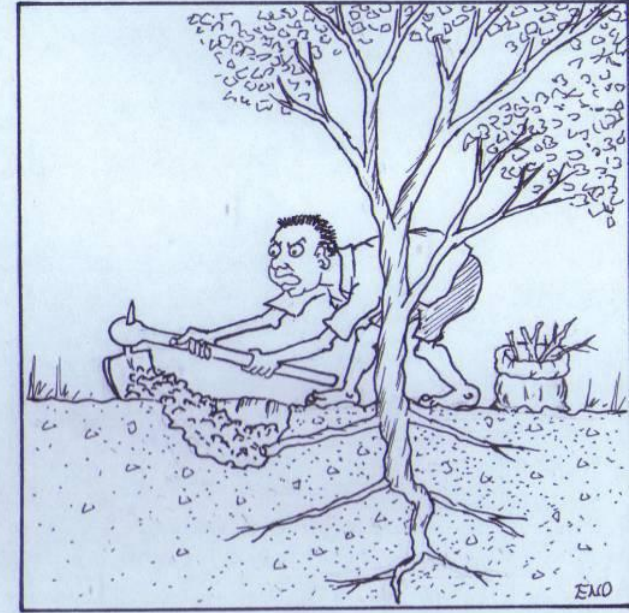
Dig the root at a considerable distance



Avoid severing the tap root



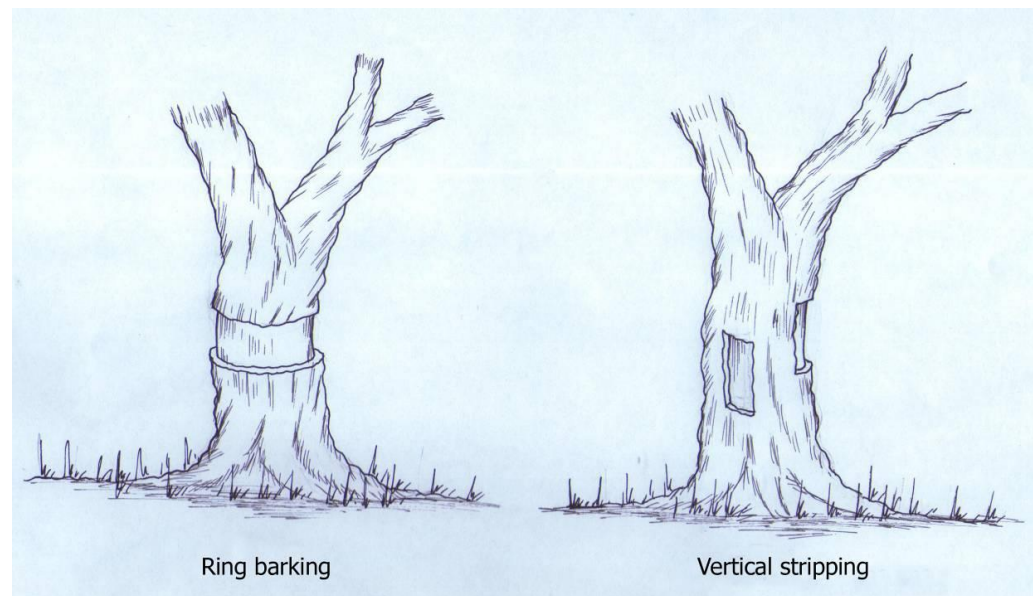
Collect only lateral roots



Cover the hole

Guidelines for bark harvesting

- **NEVER** ring-bark
- Use vertical stripping
- Remove small sections leaving some inner bark
- Use thin flexible blade/bush knife –
Don't use an axe
- Use tree seal e.g. cow dung to prevent drying



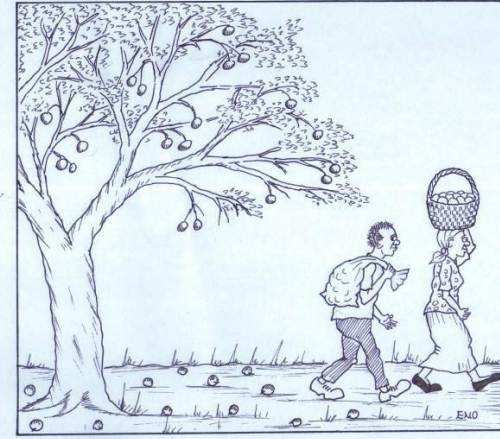
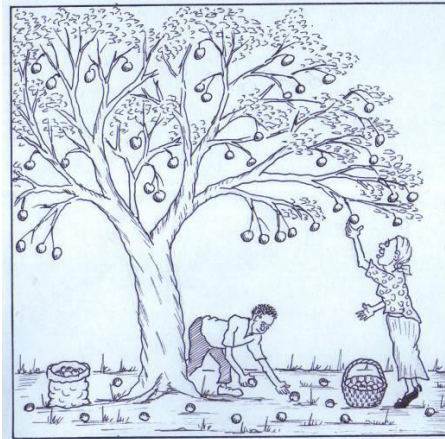
Guidelines for leaf harvesting

- Pluck individual leaves as opposed to stripping
- Regularly prune branches
- Injure a limited number of roots to encourage sprouting of new root suckers



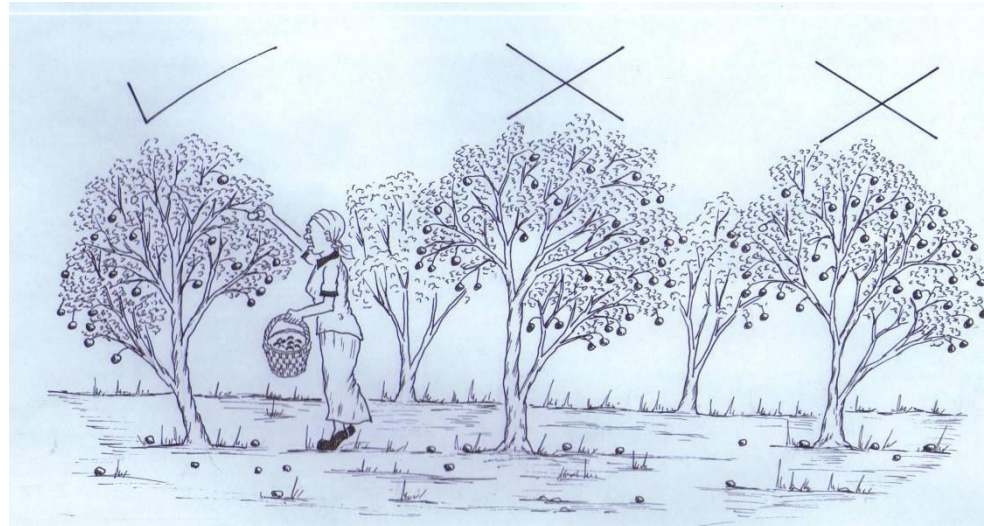
Guidelines for fruit harvesting

- Avoid collecting all good looking high quality fruits



Do not collect all good looking fruits, but leave some on the ground.

- Always leave behind adequate quantities for natural regeneration



Only collect fruits from some trees and leave others completely.