

Farmer Managed Natural Regeneration(FMNR) “Experience and lessons from East Africa”



Content

- Acknowledgement
- The seriousness of deforestation in East Africa
- Efforts to reforest East Africa through conventional approaches(Tree planting)
- Regeneration of degraded land through FMNR
- Regeneration of pasture lands

About the founder.



Is deforestation a serious issue?

- Tanzania mainland occupies about 88 million hectares (ha) of land including water bodies and mountainous landscapes.
- The amount of forests and woodlands on the mainland is about 37 million ha(FAO, 2002; Hurskainen in Malimbwi *et al.*, 2003 and UNDP, 2007). This represents over 40% of the total mainland area.
- According to UNDP(2007) the average rate of deforestation in Tanzania was 412,000 hectares per annum; and that the percentage of natural forest and woodland cover changed from 46% in 2005 to 36% in 2007.
- The same trends of deforestation are occurring across other East African countries.

Reasons for deforestation

Key reasons

- Clearing for agriculture
- Production of charcoal and;
- Over-exploitation of wood resources for timber and poles.

The problem of deforestation is further compounded by

population pressure & soil degradation
poverty .

- Population growth: From > 10 million(1961) to more that 44 million people (2012)
- Experiences show that 99% of Tanzanians living in rural and about 90% of urban dwellers are heavily dependent on wood-energy for cooking and for house warming in colder highland areas.

Is the current situation the same as say 20 years ago?

- Studies show that the situation was not like this just few decades ago.
- Deforestation caused by charcoal making, expansion of agricultural areas, fire wood/timber harvesting and bush fires is increasing at the increasing rate
- In short, in terms of tree and vegetation cover-the situation is worse than 20 years ago

Are we really making a progress?



Efforts to restore the degraded environment through tree planting

- Different partners, governmental and non governmental have tried to restore the destroyed environment. Restoration efforts have mainly centred on tree planting.



In Tanzania, several campaigns have been carried out

- 1. After harvesting a tree, plant a tree (Kata mti, panda mti)



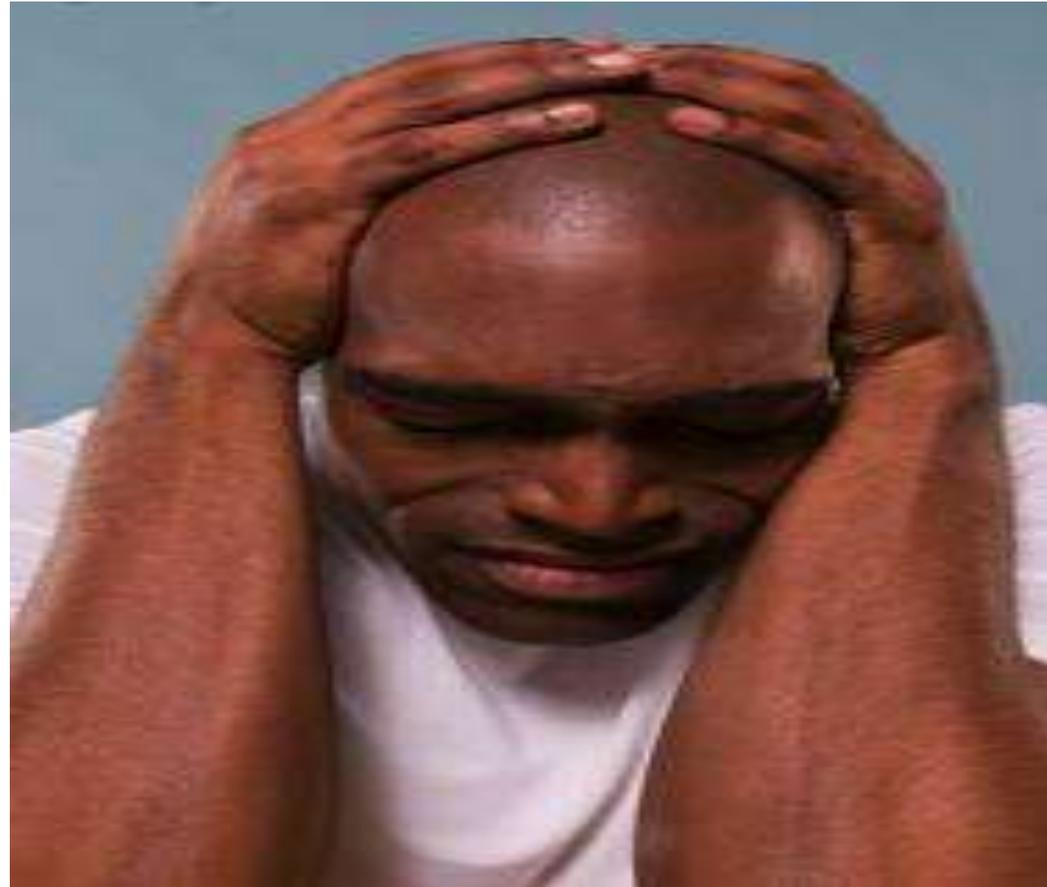
2. For each harvested tree, plant trees (Kata mti, panda miti)



3. Before you harvest a tree, plant trees(Panda miti, kisha ukate mti)



Despite the efforts of government and other partners, the situation has deteriorated



Reasons for mediocre reforestation through tree planting

Drought



Climate incompatibility

- In some cases trees were planted in some areas without consideration of climate compatibility.
- Such trees could not survive because they are not suited to the places where they were planted.

Livestock disturbance



Imperfect timing

- In Tanzania , 1st January every year is the date set for tree planting throughout the country.
- However, during this time some regions are in the dry season and this doesn't provide good environment for tree growth

Profit making motives

- In some places the motive behind tree planting is profit making through timber business and not environment improvement
- So once the harvesting has been done, one doesn't work to regenerate the harvested area

Expensive seeds



Tedious and time consuming



So what?

- Conventional approaches of reforestation will continue to be important.
- However, FMNR should be emphasized because it provide answers to challenges that are being experienced in tree planting
- In other words –the two approaches complement each other

FMNR and its role in reforestation

- During land preparation farmers treat the sprouting stems as weeds, slashing and burning before sowing their food crops
- For FMNR , those sprouting stems are key to REGENERATION

FMNR Definition:

Protection and management of shoots growing from existing living tree stumps, roots and tree seeds, especially of useful woody species.

The underground forest concept

- FMNR is based on the **underground forest concept**
- Most indigenous trees have a strong root system that is almost as big as the tree above the ground.
- When one cuts a tree, this strong root system remains –and can regenerate to another tree given favorable conditions
- The sprouting trees in this case are more capable to withstand harsh conditions of drought and animal disturbances than transplanted tree seedlings



FMNR Steps

- **Step 1.**

Survey your farm/land and note how many and what species of trees are present.



Step 2

- Select the stumps which will be used for regeneration



Step 3

- Select the best five or so stems which will be pruned and cull unwanted ones. In this way, when a farmer wants firewood he/she can cut the stem(s) that are needed and leave the rest to continue growing.



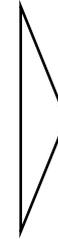
FMNR: Systematic regeneration of trees from living tree stumps, roots and seedling



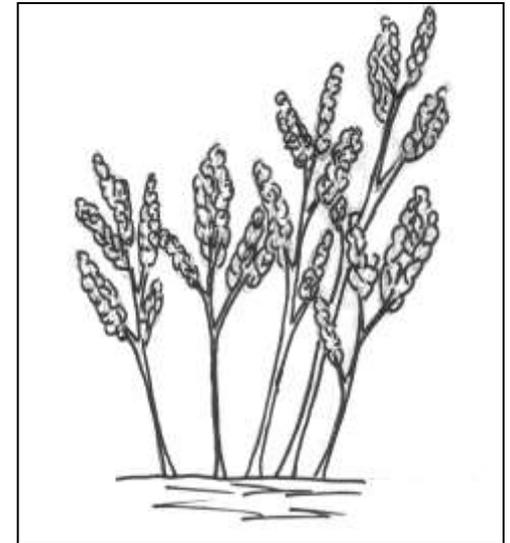
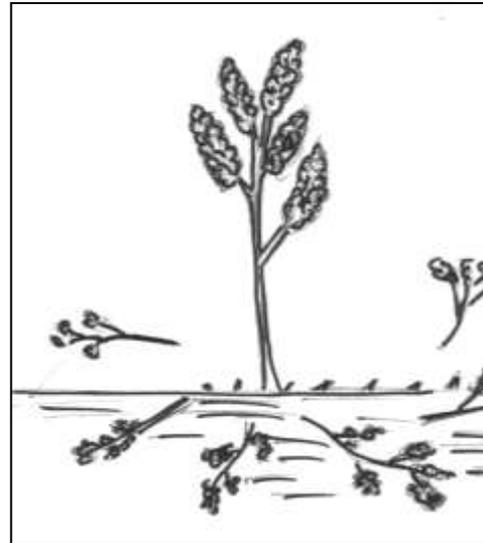
Select desired tree stumps and for each stump, choose number of (tallest and straightest stems to leave



Remove unwanted stems and side branches



Cull emerging new stems and **prune** side branches from time to time



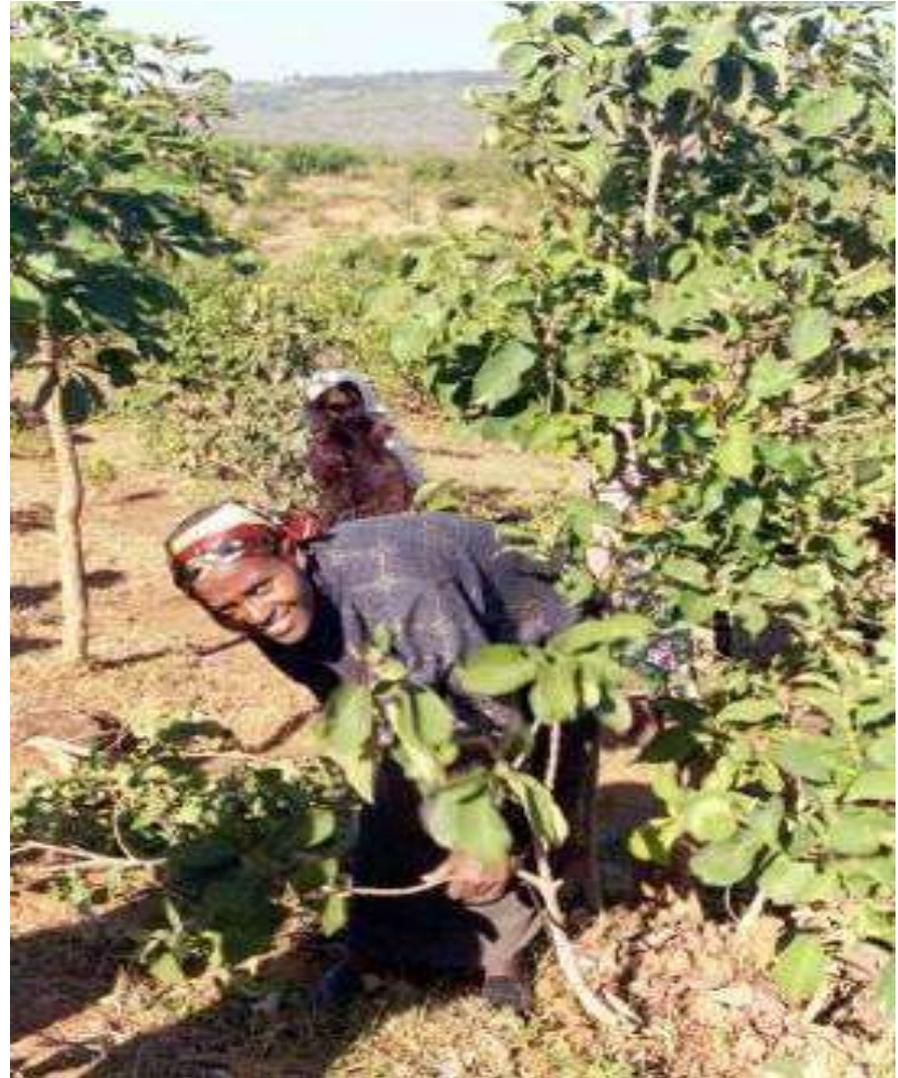
What tools are used to prune trees?

- The best implement to use is a saw because it provides a clean cut. In fact, a wide range of commonly owned tools can be used, including axe, machete, harvesting knife and even hoe. The main requirements are that the tools be sharp and that cuts are always made in an upward motion, not in a downward motion. The objective should be to make a clean cut with minimal damage such as stem bruising or splitting, or stripping of bark. Different tree species may require different pruning techniques, something that can be determined by farmer experimentation and observation



Who can practice FMNR?

- With a little training, women and men, boys and girls, farmers and herders can practice this simple activity. It really depends on the community, the culture and who owns the trees and/or who has the right to utilize them. FMNR is normally practiced in the dry season when labour is more readily available but does not have to be restricted to a particular time



Dos and Don'ts in FMNR

- **Simple rules of pruning are:**
- **1. Always use sharp implements.**
- **2. Always cut upwards carefully to avoid bruising and stripping of bark.**



Don't cut downwards

- When cuts are made downwards, the tree can be easily damaged through splitting or the bark may be stripped from the stem (right). Excessive damage will set back the plants ability to re-grow and the wound may become an entry point of harmful insects.



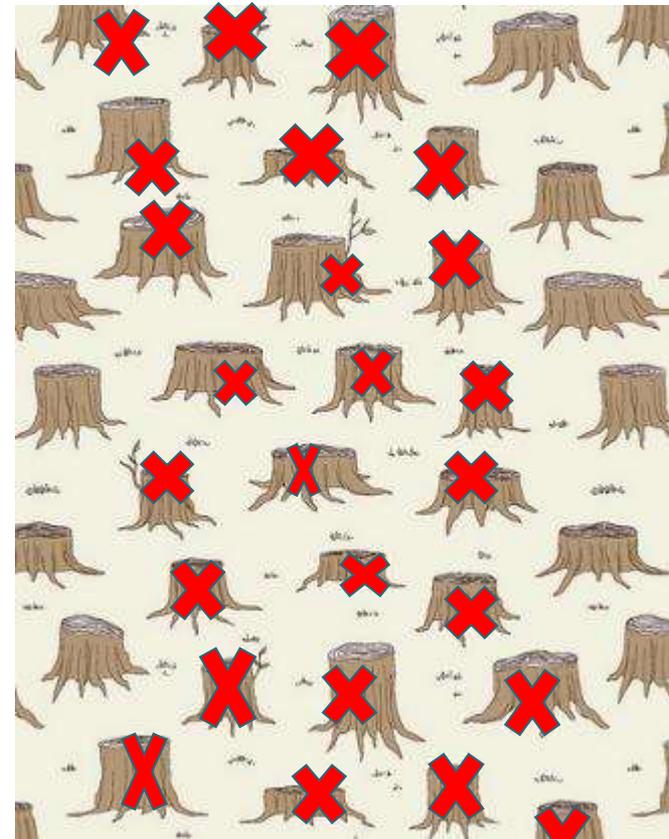
Where do we practice FMNR?

- FMNR is practiced on farmland, on degraded forest land and on grazing land. In fact, FMNR can be practiced wherever there are sprouting tree stumps and roots and where the individual or community wishes to restore trees to the landscape.
- On individually owned farmland, FMNR is best managed by the farm owner as it is in his/her best interest to protect the trees. On communal land, it is important for the whole community and external stakeholders such as nomadic herders who frequent the area regularly to jointly manage FMNR. For community management to work, organizational structures such as traditional authority roles are needed in order to manage the work and for dealing with issues and for communication purposes

FMNR in a forest/pastureland



FMNR in a farm



Flexibility

- It is important to note that the decision on where to practice FMNR and the exact method of pruning will largely depend on the individuals and communities themselves.
- No prescription will be entirely suitable for every situation; hence the emphasis is on the method being 'farmer' managed over other considerations. This allows for great flexibility to suit local conditions and to meet local needs. When community members have the freedom to adapt FMNR to meet their own needs there is a greater chance of successful adoption.

Why FMNR?

- This approach can help rural communities overcome critical challenges that has obstructed the achievement of maximum results through conventional approaches (mainly tree planting).
- This can be achieved in a simple and cost effective way
- The adoption of FMNR leads to multiple benefits such as improved crop yield, pasture and biodiversity

FMNR tolerate drought

- The strong root system of the stump can absorb water deep in the soil . In this way the sprouting trees can grow and survive dry spells and drought
- Trees that sprout from the stumps are better suited to survive and have higher survival rate than trees.

NOTE: In semi arid areas the average survival rate of planted trees is 20% or less!

FMNR can withstand livestock disturbance

- FMNR re-growth is stronger and more capable of survival than transplanted seedlings. and
- Reforestation using FMNR has succeeded even without excluding livestock. However, where possible, it is beneficial to manage livestock for six months to a year after pruning.
- Fewer trees will be damaged and better growth achieved if livestock are managed well during this initial period.

FMNR is cost effective

- It doesn't need external funding to implement FMNR. This is contrary to tree planting where seeds and other materials are to be bought
- Maintenance costs of FMNR are close to zero and this means FMNR projects are more likely to be sustainable

FMNR is not time consuming

- It doesn't consume much time in term of monitoring
- Pruning is done after reasonable time-say three months

Benefits of FMNR

- Human and animal nutrition as many regenerated species provide edible leaves and fruits.
- The local economy through harvest and sale of firewood, poles and non timber products.
- The quality of life by providing shade and beauty and by reducing wind speeds, dust and high temperatures.
- Improved water infiltration and hence groundwater recharge.
- Increased crop yields by providing shade, wind protection and through soil enrichment.
- Rapid, cost effective and large scale land reclamation, forest regeneration and pasture lands.
- Bio-diversity with the return of wildlife, rare plant species and natural pest predators.

Charcoal production



FMNR SOLUTION

- The FMNR project integrates income generation for youth in rural areas to provide them with alternatives for earning their livelihoods

How is FMNR responding?

Need for fuel in urban areas



FMNR solution

- Promotion of energy saving stoves
- Encouraging the use of gas in urban areas
- ELECTRICITY??

How is FMNR responding?

Invasion of communal forest reserves

- This is also addressed by integration of improved bee-keeping and other Income Generation Activities

FMNR solution



How is FMNR responding?

Benefits of Bee-keeping integration

- The practice provides protection from human invasion
- Honey and its products
- Income



Successful cases

Results of FMNR adoption

Humbo Project-Ethiopia

Niger

2005



2008



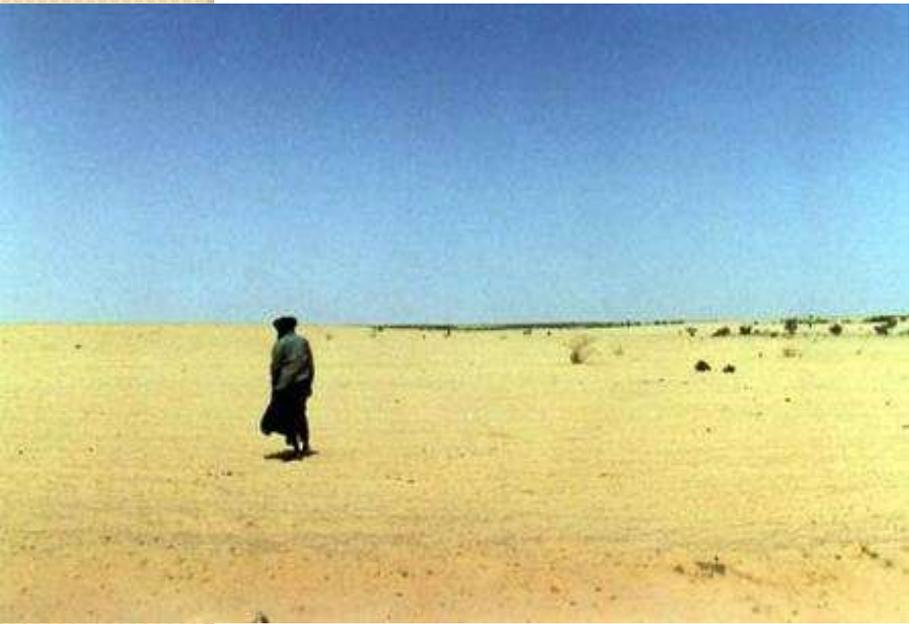
World Vision

2009

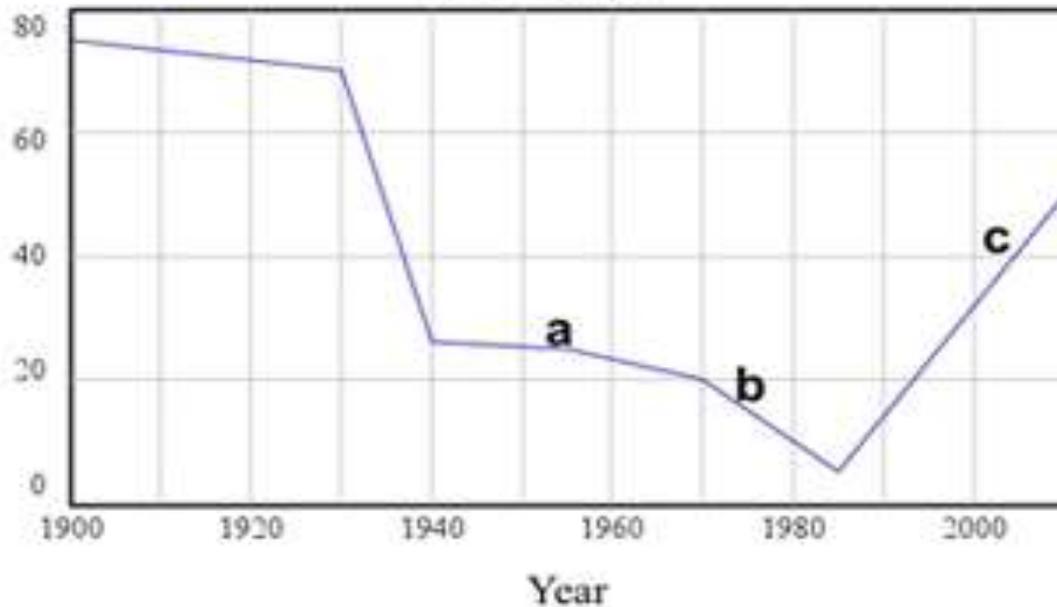


2010





Tree Density



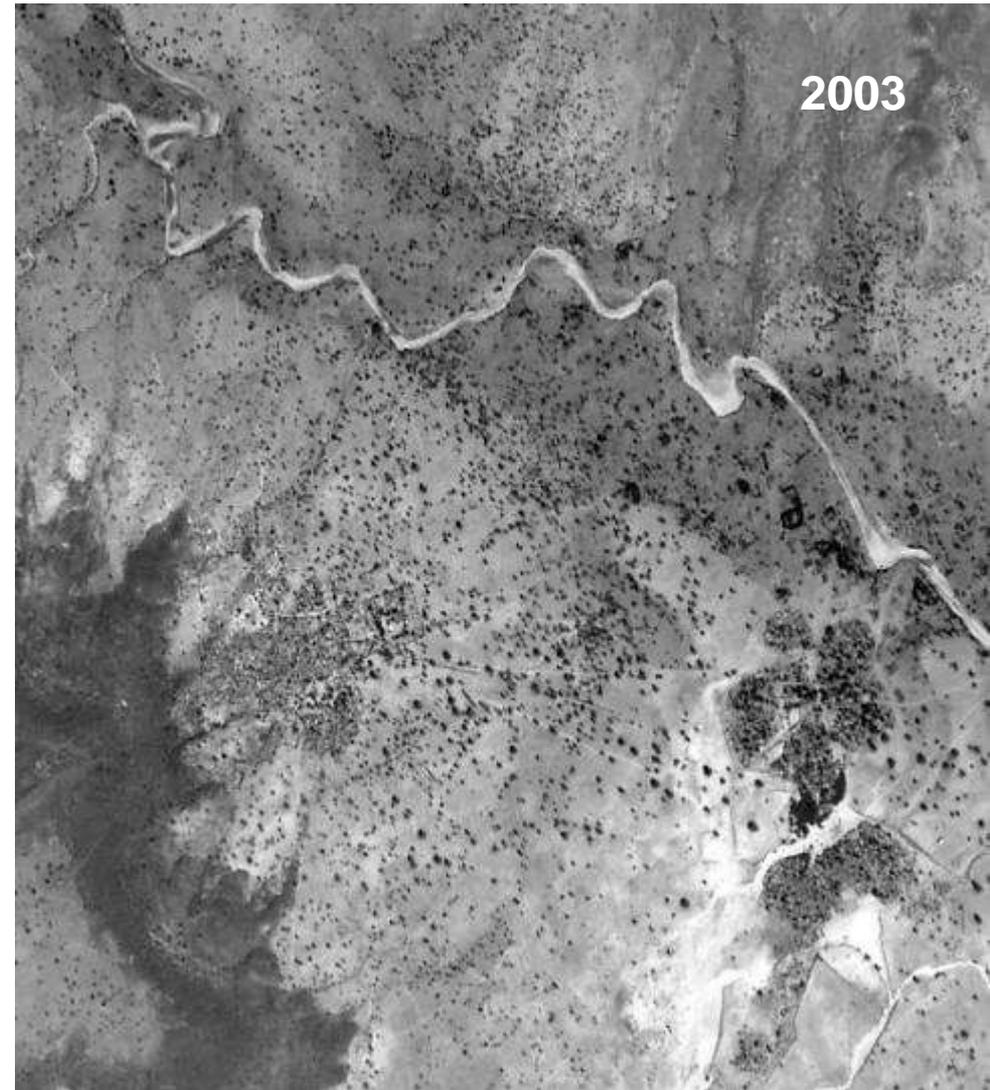
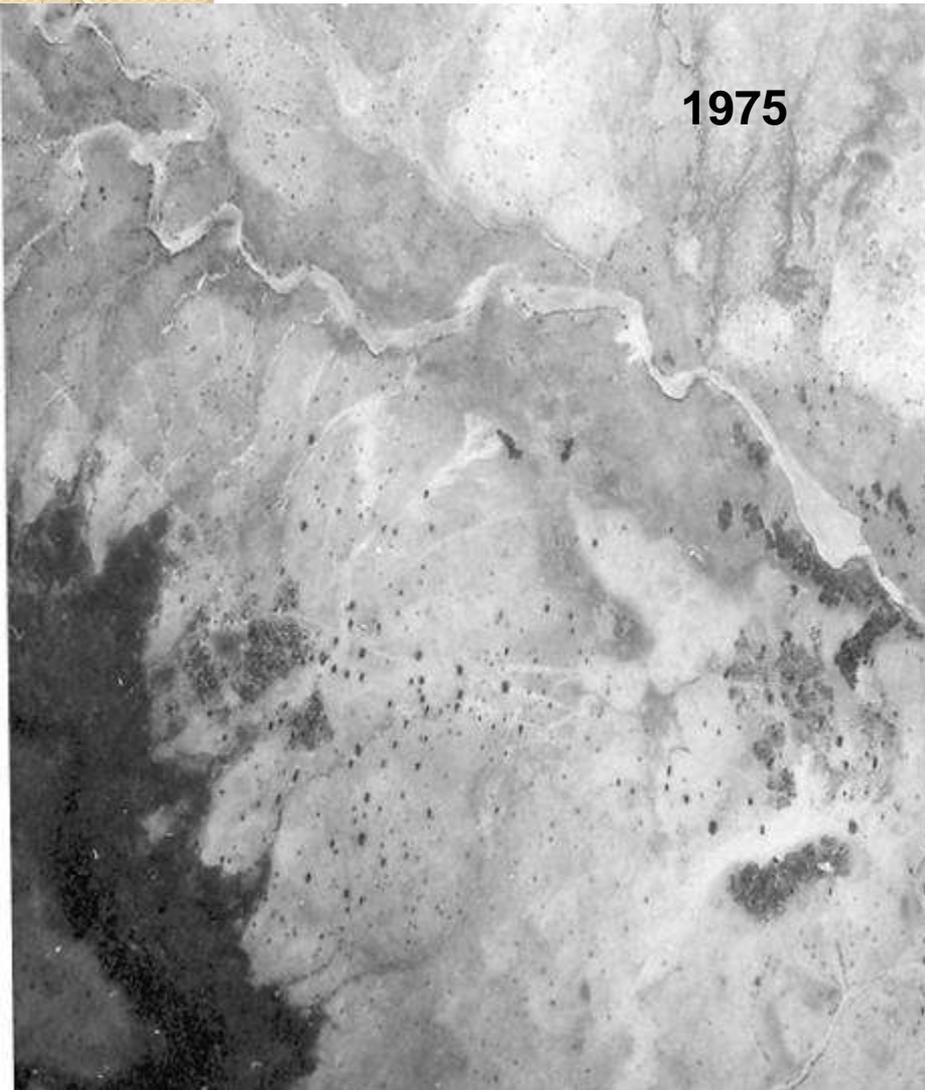
➤ Tree density dropped from 80/ha in 1900 to 4/ha in 1984.

➤ From '84 – 2010 it rose to 50/ha.

➤ Some farms have 150 trees/ha.



Galma en 1975 et 2003 (exemple impact de la RNA)



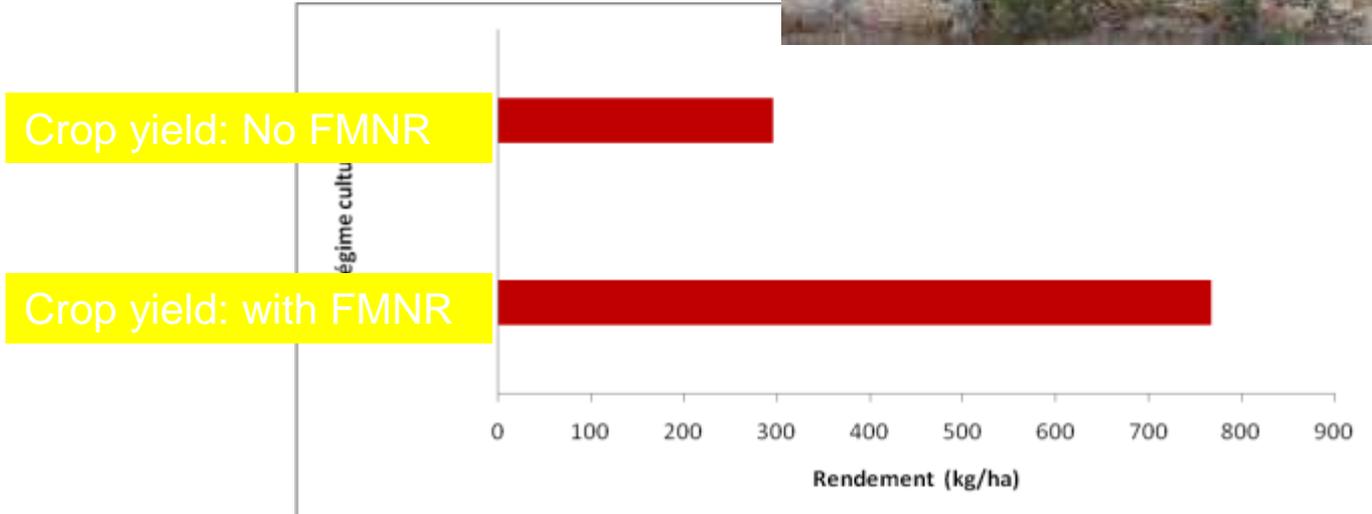


Greater crop resilience to drought.

Increased availability of fodder.



Crop yields doubled



Pastureland regeneration

- An interesting thing about FMNR is that, efforts to regenerate trees –leads to regeneration of vegetation thus making available pasture for livestock
- It takes the same simple and almost cost free initiatives to regenerate a pastureland
- A good example is just close by in Mukogodo, Nanyuki

Steps in pastureland regeneration

- Communities bring together their animals and pasturing is done jointly.
- A herd of cow of recommended size is sheltered in an area to be regenerated for 7 days. The animals get pastured in chosen place but return for shelter in the area to be regenerated for 7 days.
- Cow hooves help to break bare soil's hard pan through day to day trampling.
- The chosen area gets fertilized through animal dung.
- The chosen area gets seeds from animals' dung .Pastures consumed by animals are rich in seeds.

Through this very simple process- bare areas are regenerated and they become covered by grass again.



After 1 months



After 3 months



Which future do you aspire?



Its all in our hands!



**This is the Future!
Asante!!**

