

FMNR

Farmer Managed Natural Regeneration



World Vision



UGANDA TECHNICAL NOTES

Are the trees people, that you should besiege them?

Tony Rinaudo



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Introduction

« When you lay siege to a city for a long time, fighting against it to capture it, do not destroy its trees by putting an axe to them, because you can eat their fruit. Do not cut them down. Are the trees people, that you should besiege them? »

- Deuteronomy 20:19

« We need to create a home-grown, Ugandan model of FMNR »

- Joy Tukahirwa, ICRAF Research Scientist.



The photo above was taken in 2009 in Offaka, Uganda. It shows a “Modern Farmers” training site with the charred tree stumps protruding above annual crops. It captures at the same time a misguided adoption of destructive and ultimately self-defeating ‘modern’ farming practices and the generally low value attributed to Uganda’s rich diversity of indigenous trees and shrubs.

The actual technique of Farmer Managed Natural Regeneration (FMNR) is very simple and the basic principles can be learnt in a few minutes. The real struggle is for hearts and minds. Long established beliefs, attitudes and practices about trees, farming, responsibility for the environment and the relationship between trees and agricultural productivity run deep and can be hard to change. Yet change they must if Uganda, which is losing around 86,000 hectares of forest per year, is going to maintain its ability to feed its rapidly growing population into the future.

I see Uganda as one of the high potential FMNR countries. It has rich biodiversity, high rainfall, fertile soils, a strong civil society environment lobby, enormous markets for wood and non timber forest products, model forest policies, and strong political will for the environment, in some quarters at least. Yet, Uganda's forests and farm trees are under siege. The World Vision FMNR project's challenge is to reverse this situation and create a re-greening movement that spreads across the nation.

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Rapid tree regeneration from tree stump through FMNR

Beliefs, Attitudes and Practices – Not set in stone!

When I started promoting FMNR in Niger Republic in 1983, the idea was so counter cultural, so radical, that I was called 'the mad Muzungu farmer'. Widely held beliefs at the time included:

- trees and crops could not co-exist without reducing crop yields
- trees (indigenous trees in particular) grow so slowly that benefits would not be realized for one or two generations, (by implication, therefore, it was not worth bothering with trees)
- the tree carer would not benefit from his/her work because others would steal their trees (this was not without justification at the time)
- certain trees (e.g. Baobab) would bring death in the family

However, over a period of around ten years, these beliefs and the associated practices completely changed and within twenty years, FMNR spread to 50% of Niger's farmland, or around 5 million hectares. Farmers who would have never dreamed of leaving trees on their farms became enthusiastic promoters of the practice, unwittingly creating a re-greening movement that spread across the country like a fire, at an average rate of 250,000 hectares per year. The financial, agricultural, environmental and social benefits became so obvious, that that FMNR quickly became normal practice. There are examples of such a dramatic change both in Senegal and Niger, first of all in the 'mind-scape' and then, in the 'land-scape'¹.

Beliefs, attitudes and practices which could hinder adoption of FMNR in Uganda² –

- **Ugandans want immediate, short term benefits.** In fact, even in semi-arid regions, FMNR brings tangible benefits to the farmer in the first year. Most indigenous trees in fact grow quite rapidly, especially if the regrowth is from a mature tree stump and root system. Benefits include fuel wood from pruned branches and stems, increased crop yields and fodder. As the trees mature additional benefits include income from sale of wood, wild edible plant parts (leaves, fruit, nuts) and fodder.
- **Trees compete with food crops and grass.** In fact, this can be true. Paradoxically, it can also be false. Trees protect crops from high temperatures, winds and severe storms. They harbour beneficial insects, birds and lizards which eat crop pests. Trees fertilize and mulch the soil, reduce erosion and maintain long term productivity. Trees help reduce evaporation and soil moisture loss. In fact, in addition to enhancing annual crop yields, the trees become a 'crop' in their own right providing consumable and saleable products such as timber, charcoal, fruits and fodder. That is, even if annual crop yields declined, this may be more than compensated by the value of tree products. However, it is important to select the right tree species, to prune them suitably and to maintain the density of trees which will provide the desired outcome. Getting the right balance between trees and crops, and knowing which trees, will be enhanced through collaborating with research organizations such as ICRAF in the WV Uganda FMNR project.

¹E. Cameron, (2011) From vulnerability to resilience: Farmer Managed Natural Regeneration (FMNR) in Niger http://cdkn.org/wp-content/uploads/2011/12/Niger-InsideStory_cbc2_web.pdf

Senegal Beysatol Project

<http://fmnrhub.com.au/projects/senegal/>

² Provided by participants in the World Vision sponsored FMNR workshop in Nakasongola, 18,19 June, 2013.

- This is Uganda's cattle corridor, and fire is used to remove coarse, unpalatable grass and encourage sprouting of succulent new growth. People will never stop burning the bush. See below *Fire, man's tool of desertification*.
- People lack zeal to protect trees. Often trees provided for free are not planted, or planted and neglected. Through workshops and exchange visits, and regular follow up to 'walk with farmers' through friendly encouragement, listening, carefully and respectfully correcting and through simply being a friend, peoples' beliefs and attitudes can be radically changed. See attachments in this section. Once convinced, the farmers themselves will become the biggest promoters of FMNR.



In Niger, once understood, FMNR spread rapidly from farmer to farmer, simply by word of mouth.

This Senegalese farmer became so enthusiastic about the benefits he was realizing from practicing FMNR that he wanted to share the good news with as many people as possible. He erected a sign and a flag on the edge of his farm, beside a well used, market road. Out of curiosity people going to and coming from the market would stop and talk to him about the meaning of the sign and flag and he would explain FMNR to them. In this way, FMNR spread even beyond project boundaries.

Fire – tool of desertification

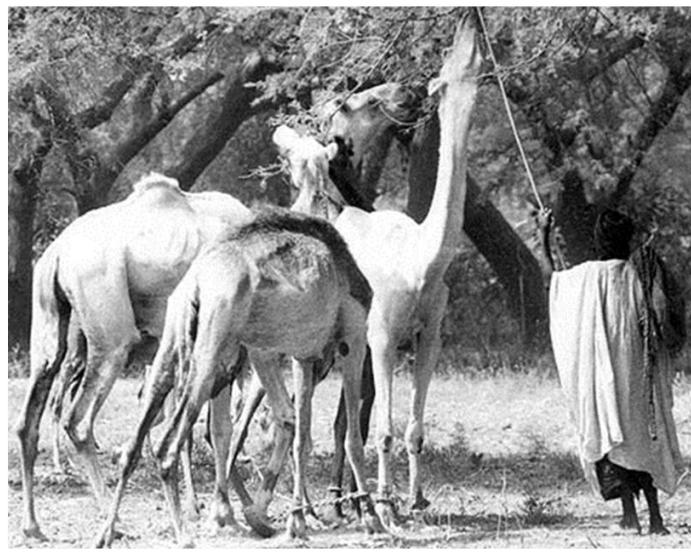
Whether accidentally or deliberately lit, fire is a destructive force. Grass, shrubs and trees are either killed outright, or reduced to their stumps. Wildlife are killed, or their habitats destroyed, so that they leave the affected area. Soil life which is instrumental in maintaining soil structure and fertility is killed or, its effectiveness is greatly reduced as the food source, organic matter, is burnt. Natural processes which maintain soil fertility into perpetuity are disrupted and soils become more prone to erosion, or become compacted and unproductive. In more humid climates, the changes can be gradual, and over time, go more or less unnoticed. But sooner or later, the land is abandoned and considered to be wasteland.

Through regular burning of pastures, palatable grasses, herbs and legumes are soon replaced with coarse, fire resistant, unpalatable species. In time, the landscape becomes a green desert which produces meagre amounts of fodder for livestock and must be burnt annually to be of any value. This in turn further degrades the environment. And so a fire dependency syndrome develops³.

³ FMNR Trouble-Shooting Notes, Section 5
<http://fmnrhub.com.au/wp-content/uploads/2014/05/FMNR-Trouble-Shooting-Notes.pdf>



What appears as a lush pasture is practically worthless as fodder. Regular burning has eliminated palatable species, and coarse, unpalatable grasses have taken over, turning a productive, bio-diverse landscape into a green desert



Camels eating leaves and pods of trees. Farmland with trees will get more visits from animals during the dry season than bare land and animals will fertilize the soil while visiting.

Destruction of trees through fire and clearing is actually counter-productive because a large proportion of the diet of ruminants comes from the seed pods and leaves of many indigenous tree and shrub species. Trees, being more tolerant to drought, continue to provide fodder even when grass species stop growing or die off. The destruction of trees results in greater vulnerability to disaster and reduced resilience to environmental shocks such as drought.

In Shinyanga, Tanzania, once productive grazing land which had become a desolate wasteland was restored through community mobilization to restore tree cover and a return to the traditional land management system⁴.

Tips for working with pastoralists:

- Pastoralist's understanding of the important role trees play in animal nutrition and general welfare is key. Discover what the pastoralists already know about the value of trees. Learn about any traditional taboos on cutting certain tree species, or on leaving certain tree groves - and build on this traditional knowledge. Ask if it is possible to extend these traditional methods of tree care to a wider area.

⁴ A rural Revival in Shinyanga, Tanzania.
<http://www.worldagroforestry.org/downloads/publications/PDFs/BI6751.PDF>

- Practicing FMNR in pastoral regions does not necessarily require excluding herders from grazing areas. How you prune existing regrowth from stumps makes a big difference to how difficult it is for animals to damage the growing trees. The *Pruning Techniques and Tools* section of the 'FMNR Trouble Shooting Notes' gives a few pointers on not over-pruning regrowth, and the importance of leaving multiple stems for added protection from livestock - it is harder for animals to break trees when there are multiple stems and branches⁵.
- If tree regrowth is already 1.5 - 2.5 meters tall, no exclusion may be required at all. If regrowth is very small - temporary exclusion of 6 months to one year may be required. However, even here, it may be possible to graze smaller animals (sheep, goats, calves), or to practice cut and carry, or to treat the area as a fodder reserve which can be utilised once the trees are around 1.5 - 2.5 meters tall.
- Grazing areas are still vast. Therefore, it should be possible to work with the communities and ask them to come up with a five year plan to sequentially practice FMNR on say 20% of the land each year - thus, in any one year, only 20% of the land is temporarily excluded from grazing while trees grow. In year two, the trees should be tall enough and robust enough to withstand grazing, then a second section of the rangeland (20%) would be selected in the second year and so on.



Ghana Talensi FMNR project. Livestock and trees happily co-exist on land that formerly had been burnt each year. With the cessation of burning, by year two palatable grasses had returned. Livestock also browse on leaves and pods of some of the regenerating tree species.

⁵ FMNR Trouble-Shooting Notes, Section I
<http://fmnrhub.com.au/wp-content/uploads/2014/05/FMNR-Trouble-Shooting-Notes.pdf>



Termites – Friend or Foe?

Termites are maligned, yet they play a critical role in ecology as the grand recyclers. Many people see termites as pests which destroy crops and trees. However, they are the earthworms of semi-arid and sub-tropical climates, aerating the soil, enhancing water infiltration, fertilizing the soil by converting organic matter to humus and transferring moisture from deeper soil layers to surface layers. Often, when you do see them on trees, they are merely eating the bark and dead wood.

FMNR provides food for termites in the form of tree leaves and pruned twigs. By working with nature one can harness the power of termites to restore degraded and infertile land naturally.



Termites – doing what they do best – recycling nutrients as they break down dead leaves and twigs.

Termites are eating the leaves and twigs of this pruned branch. Through tunnelling and burying their wastes, termites increase aeration (and hence, soil microbial activity), water infiltration and soil fertility.



Termites have ‘attacked’ this tree trunk of an indigenous tree, but they have not harmed the vigorously sprouting shoots. Perhaps they are eating the sloughed, dead bark of the trunk.

I think one way to explain to farmers what is happening is to use their own cattle as an example. Farmers in the Sahel know that their cattle have certain favourite grasses, but as the dry season progresses, their cattle will progressively eat less and less favoured plants, in order to survive as they get more and more hungry. All animals do the same thing. (We humans do, too, when suffering from hunger.) So termites will only eat dead wood when they have plenty to eat. But when we destroy most of the biomass in their environment by cutting trees, burning crop residues, etc., we destroy their normal foods, so they eat things they wouldn't normally want to eat, like our crops. If, on the other hand, we grow trees (a la FMNR) in our fields, the termites will have plenty of dead branches and twigs to eat, and will leave our crops alone.

I like this message because it not only provides one more motivation for farmers to plant or protect trees, but it has an important ecological message in general: when we take care of nature, nature will take care of us.

Sincerely, Roland Bunch, Agricultural Consultant, Author, Two Ears of Corn.

Indigenous Pride – valuing indigenous trees

I found some Ugandans to be prejudiced against their own indigenous trees. Commonly held beliefs are that indigenous trees grow slowly; they are not as profitable as exotic trees; they are harmful to crops and they harbour dangerous wildlife. If these are widely held beliefs, they need to be challenged because they will negatively impact project outcomes and work against farmers adopting FMNR.

The Ugandan forest was once the pharmacy, supermarket, hardware shop, cathedral, fertilizer factory and source of spring water to all who depended on it for their livelihood. Somewhere in time, knowledge of this has been lost, whether through modernization, westernization, colonization or some other -ization. Forests today have become something to be exploited, despised, modified, removed and replaced.

Positive things which can be promoted about indigenous trees include -

- They are part of Uganda's unique natural heritage, something to be proud of
- They are beautiful
- Many, perhaps most are very fast growing
- They are perfectly adapted to their environment
- Through FMNR, establishing indigenous trees costs very little and reforestation is rapid
- If managed well, indigenous trees have significant economic value for their timber and non timber forest products

Corruption

In his presentation at the Nakasongola FMNR workshop⁶, Louis Baligladembe (District Natural Resources Officer, Kibaale District) noted that Uganda's forest plans and policies are excellent, however enforcement is weak. Time and again, protected forests are destroyed by powerful, well connected, people. It is easy to be demoralized and de-motivated about intervening. Yet, it also came out in the meeting that civil society in Uganda can be strong. Communities can influence politicians' actions.

One solution may be to harness the power of the 'Citizen's Voice and Action' (CVA) approach already promoted by WV Uganda. CVA aims to empower communities to influence the quality, efficiency and accountability of public services. Educated, empowered and mobilised citizens are encouraged to assess the performance of public services and take action where deficiencies are discovered.

Giving people legal user rights to manage forest and communal land sustainably is one of the best ways to counter corruption. Once communities realize that it is in their self-interest to protect a forest and that they have a legal position to stand on, it will be very difficult for outsiders to exploit them. Granting forest legal user rights was one of the most important contributory factors to the success of the Ethiopian, Humbo community managed forestry project.

Absentee landlords

Large tracts of land in Nakasongola are owned by people not living in the community while FMNR project participants generally have very small parcels of land. This fact could negatively affect project outcomes.

Tips for dealing with this issue -

- Start with what you have – work with communities to first-of-all practice FMNR on farm land and any available communal and grazing land not owned by outsiders
- Do a mapping exercise to identify exactly who owns what land
- Approach absentee land owners to see if some type of FMNR 'share cropping' arrangement could be made. i.e. project participants prune and manage the trees and proceeds from the sale of wood and non timber forest products could be shared in a fair and transparent manner

Charcoal – poor man's gold.

One of the most significant contributors to deforestation in Uganda is the charcoal industry. All the reforestation progress to be made through FMNR will be nullified if the charcoal industry continues in its

⁶ The FMNR workshop in Nakasongola took place on 18 and 19 June 2013. Participants included WV FMNR champions, representatives from ICRAF, National Forestry Research , Agriculture, Natural Resources & Forestry Departments and Project area district government.

current form. Charcoal is an industry of poverty and all it leaves for our children is more poverty and misery. Charcoal gives us a meal for today, but when it has destroyed the forest there is only hunger left for tomorrow. But if we care for the forest – it feeds us every day and forever. The benefits are a hundred times greater than the once off benefits from charcoal making. The benefits of a forest continue year after year after year.

However, as Assefa Tofu of World Vision East Africa Region pointed out in the Nakasongola FMNR workshop, we will not achieve anything by making enemies of charcoal makers, after all, their objective is not to destroy the forest. All they want to do is feed their families and to have a better life. Therefore the challenge is, how to reach out to them and show them a better, more sustainable way of reaching their objectives.

Possible approaches may include:

- Form charcoal makers associations
- Explore legal recognition and registration options
- Provide training on sustainable forest management and best practice methods for maintaining ecosystems
- Investigate availability of efficient kilns and training opportunities in Uganda or the East Africa region (current charcoal making methods are very inefficient and wasteful).
- Facilitate market development for sustainably produced charcoal
- Assist charcoal makers to diversify their business and benefit from a broad range of non timber forest products



There was once a small boy who was at the age where he believed he knew more than his father. To prove the point, he caught a butterfly and cupped it in his hands. Taking the butterfly to his father he asked “Father, is the butterfly dead or alive?”

The boy’s father was a wise man. He understood that if he said the butterfly was dead, his son would release it and if he said that the butterfly was alive, he would crush it, and so he answered: **“ Son, the answer is in your hands.”**

Will this project succeed in creating a Ugandan FMNR movement? Will it successfully tackle intractable problems such as corruption, false beliefs, deforestation and charcoaling?

The answer is in your hands. If you humbly seek God’s help, He will give you the wisdom and the strength you need to make it happen.

About the author



Tony, or 'chief' as he is known in the Program Research & Advisory team, is involved in the development and promotion of agricultural-forestry-pastoral systems across a range of environments. Tony previously spent 18 years in Niger managing a long-term agricultural development program. The natural-regeneration reforestation methods Tony developed were adopted by farmers and contributed to over five million hectares of land being revegetated in Niger alone. Tony was also instrumental in introducing edible seeded Australian acacias into Nigerien farming systems and in their promotion as a human food.

Tony's specialist areas are de/reforestation, desertification, sustainable farming and food production. Tony is currently engaged primarily in promoting reforestation internationally and facilitating ongoing research and development of edible seeded Australian Acacias.

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