

# Regreening

In the mid-1980s, farmers and NGOs developed a technique to regenerate “forests on the farm” in dry areas in Niger. Now, millions of hectares have become greener and more productive. This African tale of on-farm forestry stands out for its simplicity and impact on farmers’ lives. | **Text Chris Reij**

In LEISA Magazine 23.2 (2007), Tony Rinaudo reported on the development of farmer-managed natural regeneration of on-farm trees in Niger. Since the mid-1980s, this technique has been developed and, with occasional set-backs, has kept on spreading. In the 1990s several researchers noticed that villages had become greener, but its scale only became clear when Gray Tappan, a remote sensing specialist from the United States Geological Survey, compared aerial photos of 1975 with satellite images of 2005. He estimates that the number of on-farm trees has increased by 200 million, over an area of 5 million hectares. The speed of the re-greening process is surprising. In some densely populated parts of Niger, the transformation occurred in about twenty years. On average, farmers added 250,000 hectares

each year. This makes it the largest environmental transformation in the Sahel.

**More children survive** In 2004/2005 a drought and locust infection hit Niger. In October 2005, field visits to villages with and without on-farm re-greening showed that villages which had invested in on-farm trees had little or no infant mortality. People had been able to prune or cut some trees to sell as timber or for fuel on the market, allowing them to buy expensive cereals. The villagers could also harvest fruit and leaves for consumption or for sale. Villages with few on-farm trees lacked this possibility. These days, trees produce fodder for livestock. Higher tree densities reduce wind speed, retain more

# the Sahel

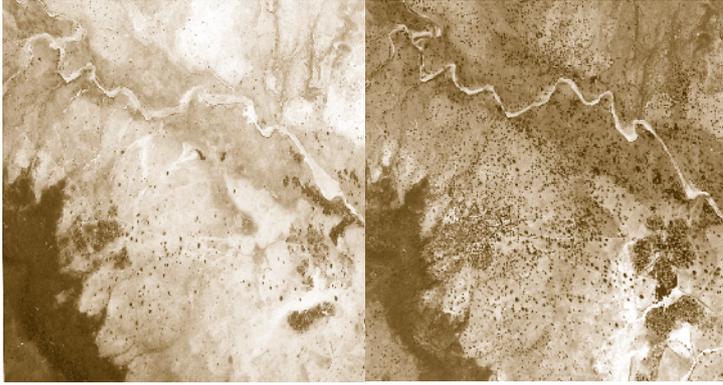


Different sceneries in what was barren land. Photos: Mathieu Ouedraogo, Chris Reij, Frank van Schoubroeck

water, provide shade and reduce local temperatures. Women benefit most from the higher on-farm tree densities as they can now collect firewood on-farm rather than walk long distances. In 2009 it was estimated that farmer-managed natural regeneration in Niger feeds about 2.5 million people.

**Why this success?** Although local researchers and officials knew about the increase in on-farm tree densities, nobody realised its scale and intensity, until it was detected and verified through remote sensing. This re-greening is only partially the result of project interventions. It happened mainly in regions with high population densities where environmental degradation had become very severe in the 1970s and

1980s. Farmers felt a sense of urgency to do something. Before the 1980s, all natural resources belonged to the state. But after 1985 farmers began considering themselves the owners of their on-farm trees, which induced them to protect and manage them. As soon as farmers felt the different benefits, they copied the example. In re-greened areas, a sense of property developed and taking wood from the neighbour's land is now considered stealing. The standard reaction of governments and NGOs to environmental degradation is to launch tree planting campaigns. Yet, in dry areas, four out of five trees die soon after planting. Therefore, nurturing trees that pop up naturally is a more efficient strategy. Natural regeneration comes from what Rinaudo (2007) called



**The same area in 1975 and in 2005 in southern Zinder (Niger). The increase in number of on-farm trees is striking.** Photo, courtesy: Gray Tappan

the “underground forest” (the roots and stumps of trees cut in the 1960s and 1970s) but also from the “seed memory” of a soil (seeds stored in the soil and from manure of livestock). The Maradi and Zinder regions of Niger have about 500 mm rainfall, but in regions with higher rainfall natural regeneration can be even quicker, as experiences in southern Ethiopia show. In the Asian monsoon climates, degraded forests regenerate quicker naturally than through planting trees.

**Not only in Niger** There are many more examples of natural regeneration. On Burkina Faso’s Central Plateau, farmers have rehabilitated an estimated 300,000 hectares of barren degraded land since the early 1980s. They used simple water harvesting techniques like *zaï*, contour stone bunds and half moons, and in-between they produce crops on land that was unproductive before.

Mali adopted a new forestry code in 1994. An NGO, SahelECO, decided to inform the farmers through the regional radio of Bankass that they could refuse woodcutters with a permit issued by the forestry service arriving on their fields. They began doing so and since then on-farm re-greening on the Seno plains, between the Plateau Dogon and the border with Burkina Faso, has spread like wildfire. SahelECO also helped revive the *Barahogon*, a institution traditionally responsible for management of trees. Tens of thousands of hectares have been re-greened.

Agro-forestry is part of a long-established tradition, which is getting stronger for two reasons. The first is that increasing population densities oblige small-scale farmers to intensify agriculture. Investing in the protection and management of on-farm trees is productive and cost-effective: it does not require cash, but labour investments. The second reason is the environmental crisis: environmental degradation

pushed many farmers to act. Since the middle of the 1990s average rainfall in the Sahel has increased, but it has also become more irregular and unpredictable. When crops fail, trees produce. Trees are a local “safety net” by which farmers survive in times of drought.

Conventional tree-planting is not always effective. Recently, plans were announced to expand rainforest in Brazil, which has dwindled to 7 percent of its original size. Tree planting at a cost of US\$ 1,000 per hectare should bring it back to 30 percent of its original size. Estimated costs: US\$ 11 billion. Probably, the same results can be achieved at almost no cost through natural regeneration, complemented where necessary by tree planting.

**Convincing people** For several reasons the interest in farmer-managed natural regeneration is likely to increase in the coming years. Populations grow. It is an urgent necessity to adapt to climate change in Africa’s drylands, and at a large scale. Increasing the number of on-farm and off-farm trees not only fixes carbon, but also reduces temperatures and wind speed. The first thing to do is to convince people and to inform them about the phenomenon and the way it works. Besides informing farmers, it is vital to develop policies and legislation conducive to re-greening.

Recently, a number of people decided to bring this home-grown success under the attention of policy makers, through the African Re-greening Initiatives (ARI). The idea for a Sahel re-greening initiative emerged in 2007, inspired by the large-scale on-farm re-greening in Niger. ARI became operational in Burkina Faso and in Mali in June 2009, and will most likely soon expand to Niger and Ethiopia.

ARI is not about creating a big and expensive regional project, but much more about creating a movement and a process. It is important that NGOs and other stakeholders are aware of the multiple impacts generated by re-greening, move away from conventional tree planting as the sole solution and re-direct their activities to promoting natural regeneration. ARI wants to support the sharing of relevant experience, to initiate policy debate and to develop advocacy initiatives based on the role of trees in adapting to climate change, improving food security and reducing rural poverty.

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**The re-greening initiative also features in the recently published “Millions Fed: Proven successes in agricultural development”, see page 26.**