



Mara, Tanzania

Transitioning villages
to agroforestry

Yearly Update 2021



Summary

For a decade now, our tree planting project with the Global Resources Alliance (GRA) has been increasing and sustaining forest resources in the Mara region of Tanzania by establishing sustainable agroforestry systems with smallholders.

The 746 019 seedlings raised and distributed in 2021 brings us to a whopping 2 344 929 trees planted since 2011! Assessments of trees planted in previous years show the average survival rate meets our target at 80.1%.

As well as individual farmers, schools, churches and mosques also receive seedlings. While 95% of the seedlings are distributed free of charge, 5% of 2021 seedlings were sold at subsidised rates; this is a strategy to empower the nurseries to raise their own funding to secure the longer-term sustainability of the programme.

We don't just distribute seedlings – we also distribute knowledge! Along with tree planting support, the project also trained 533 individuals and 119 institutions on tree planting and conservation, and 175 individuals and 52 institutions on agroforestry techniques.

During 2021 the project moved one of its two tree nurseries to Utegi, 75km away, where it can cater to some new communities that are keen to get involved in tree planting.

In addition, planning began for a new collaboration with Tanzania Forest Services, Butiama District Council and the village councils of Kigori and Mwikoro, WeForest and GRA. A larger scale five-year restoration of around 1475 ha of degraded hillsides near these villages is in preparation; a memorandum of understanding has been signed, and implementation of the project will begin in 2023.

2021 in numbers

746 019 seedlings raised and distributed (an increase of 33% over 2020)

17 574 of these were nitrogen-fixing tree seedlings like *Sesbania sesban*, *Gliricidia sepium* and *Albizia lebbek*

5% (38 852) seedlings were sold in the subsidised seedling sales – **2.5** times greater than in 2020

Tree survival rate since 2018 is **80.1%** according to a sample survey

708 individual farmers were trained in silviculture (533) and agroforestry (175) techniques

Since the beginning of the project:

2 344 929 trees planted

9700 individuals trained by the project

This report shares an update of our progress during 2021. Thank you for all your support!



Restoration

We met 99% of our 2021 target, with 746 019 trees planted

The remaining 3981 tree seedlings will be distributed during 2022. Since 2011, a total of 2 344 929 trees have been planted.

Since planted seedlings are at risk from low rainfall caused by climatic change, termite infestation or damage by livestock, a sample survey of trees planted between 2018 and May 2021 was carried out to identify survival rates. This was done by visiting three-quarters (300) of the 402 farmers who have taken more than 500 tree seedlings from our nurseries. We found an average survival rate of 80.1% – in line with our target of 80%.

Reaching new communities

During 2021 the project moved the Kinesi tree nursery to the Utegi area, 75km away, where there's a whole new customer base for tree seedlings. Awareness-raising about the importance of tree planting for the benefit of current and future generations was carried out through various platforms such as radio and TV stations, posters, flyers and social media via Whatsapp groups, Facebook and Instagram.

This move meant that the new Utegi nursery sold 20 020 seedlings at subsidised rates in 2021, compared to just

Hitting our training targets

The project offers training in tree planting and the conservation of multipurpose trees to make sure the farmers and institutions that receive our seedlings achieve the best results. We reached 66% and 74% of our training targets for different groups this year due to staff shortages among the tight schedule of training sessions. In 2021, 533 individual farmers (377 men and 124 women) were trained, as were 54 primary schools, 45 secondary schools, 17 churches and 3 mosques.





1804 seedlings in 2020 when the nursery was still in Kinesi. The move had the strong support of Rorya District Council, which provided two acres of land for us to establish the Utegi nursery.

Seedling sales doubled

The number of seedlings sold (rather than given for free) in 2021 was a big improvement over previous years, and represents 20% of our target for subsidised sales. Most farmers aren't yet used to setting aside money to buy seedlings because they've been provided free of charge. However, farmers have been slowly adapting to the idea of buying the seedlings as a result of our awareness campaign on various platforms, which stresses the importance of tree planting for the future.



Nurseries refurbished

Both nurseries enjoyed some improvements during 2021. Butiama nursery's office and store are now in a brand new 40ft container, and it also boasts an agroforestry training area (above). The new nursery in Utegi (below) received a solar-powered water pumping system, as well as a building to be used as an office and store.





Livelihoods

Agroforestry boosts crop yields and can generate income

Families here grow crops such as sunflower, sesame, groundnuts, maize, beans, sorghum and cassava that not only supports household diets but can provide income through sales. The project raises and provides nitrogen-fixing tree seedlings to farmers who practice agroforestry. The roots of nitrogen-fixing plants are colonised by bacteria that draw the nitrogen gas from the air and store it in their roots, raising the nitrogen levels in the soil – which in turn boosts crop yields.

Local farmers have become very aware of the benefits of these nitrogen-fixing trees and it meant that in 2021 we provided over 2.5 times more than our initial target. It also meant we exceeded our training targets for best practices in agroforestry. 175 individual farmers (120 men and 55 women) and 52 schools (31 primary and 21 secondary schools) were trained. Practical training sessions demonstrated techniques such as the introduction of nitrogen-fixing plants, the application of organic manure, and mulching.

Farmer Field Schools have been established to promote the adoption of agroforestry techniques such as alley cropping, live fencing and wind breaks. Four Farmer Field Schools took place in 2021, along with the establishment of the agroforestry demonstration centre adjacent to the Butiama tree nursery.

Tree species with specific uses that are grown in the agroforestry systems

***Azadirachta indica* (neem):**

Neem (below) has over 20 active chemicals, the most important of which is azadirachtin, which helps to repel and distort the reproduction cycles of numerous insects, nematodes, fungi, bacteria, and even viruses. The seeds contain the highest concentrations of the compound. In addition, its leaves can be used when making soap to provide antimicrobial and insecticidal properties.

***Melia azedarach* (chinaberry tree):**

The leaves have been used as a natural insecticide to keep with stored food. Aqueous and alcoholic extracts of leaves and seed reportedly control many insect, mite and nematode pests. Extracts from the fruit have long been used as an insecticide on crops.

***Gliricidia sepium* (gliricidia):**

Crushed leaves and mulch have been used as a rodenticide and have a fungicidal effect. There is some evidence to suggest that the tree itself can protect some crops from fungal, insect or viral attack either directly or by acting as a diversionary host plant for pests.





Integrating fruit trees on farms is a popular choice. We distributed 73% (137 712 seedlings) of our target this year with the most popular species including *Persea americana* (avocado), *Psidium guajava* (guava), *Syzygium cumini* (Java plum), *Tamarindus indica* (tamarind), *Vitex mombassae*, *Mangifera indica* (mango), *Citrus limon*, *Citrus sinensis*, *Muntingia calabura* and *Carica papaya*.

Farming families are becoming very aware of the benefits of agroforestry, acknowledging that their outputs per unit area are now greater than when they were growing one crop. Most are receiving diverse returns including food or cash crops, fruit, firewood, construction poles and timber and fodder for livestock.



Food security among the project's communities

Findings from a baseline survey carried out in June 2021 reveal that 86% of surveyed households consumed more than 4 food groups per day and are therefore considered to have sufficient diet diversity. However, almost 70% of households are considered to have some form of food insecurity, and 14% of households live below the poverty line. 64% of sampled households had consumed three meals per day, while 35% consumed two meals and only 1% consumed one meal.

The survey will be followed up after 3-5 years to measure the impact of the agroforestry systems on quantity, diet and nutrition.





What is agroforestry?

Agroforestry combines agriculture and forestry: trees and shrubs are grown around or among crops or pastureland. It plays a critical role in successful forest restoration by:

- reducing the pressure on forest resources and incentivising sustainable forest management by alleviating poverty;
- compensating the loss of access to forest resources;
- ensuring reliable incomes to fund sustainable forest management.

The value of an agroforestry system is in its diversity; selecting and distributing a variety of environmentally and socially appropriate tree species. In Tanzania, our programme grows between 45-70 species each year that have specific uses.

Some trees, such as timber, are harvested and ideally replaced. Planting fast-growing species in dedicated woodlots reduces pressure on the natural and degraded forests we are working to restore. Others, such as fruit and nitrogen-fixing trees, are pruned year after year providing food, soil fertility and numerous other benefits. Of course, all the types of trees sequester carbon as they grow.

Please visit our [Why and How](#) webpage for more information.

What's Next?

Expanding the programme

- A baseline study for a new Hillsides Forest Restoration Project will be implemented in Kigori and Mwikoro villages in Butiama district.
- Start of some activities in the Hillsides Forest Restoration Project, including participatory village land use planning and the development of simple forest management plans for forest reserves in Kigori and Mwikoro villages.
- Value chain analysis of some key tree species along with teak woodlots will be carried out to support new income generating opportunities.



Stay up-to-date with your interactive [Mara map](#), and check out the [photo album](#) of the project on Flickr.

Thank you for supporting the Mara project!