

# Tietê Forests

Protecting water resources and connecting forest remnants

Annual Progress Report 2022



# Summary

After the setback of the unprecedented frosts in 2021, progress in the Tietê Forests project is going well and we are very much on track.

The planted areas are developing healthily, and the hectares placed under restoration in the 2022-2023 planting season have been completed and are being followed up with the usual maintenance activities. It has been raining regularly, so survival rates should be very good this year.

One particular highlight of 2022 has been the collaboration with 16 farmers to establish the first agroforestry restoration sites in Dandara Rural Settlement. Most of them are members of the women-led COPROCAM cooperative, who already have a market chain established to sell their products, supporting each other in all aspects of production and marketing. They are very optimistic about this project, and looking forward to seeing what the future will bring.

The development of this new agroforestry programme within the landscape means this is evolving into a Forest and Landscape Restoration project that brings social and economic returns for smaller farming families.

This project is fast becoming an exemplary landscape collaboration, with superb relationships with and between our partners AES Brasil and CEIBA, as well as good infrastructure and professional, passionate team members.

This report shares an update of our progress during 2022. Thank you for all your support!

## 2022 in numbers

The 2021-2022 planting season (ended April 2022) covered **140 ha** (all native forest):

- **65** native tree species (21 filling species; 44 diversity species)
- An estimated **160 100** tree seedlings planted

The 2022-2023 planting season (ended March 2023) covered **100 ha** (86 ha of native forest and 14 ha of agroforestry):

- **80** native tree species planted (29 filling species and 51 diversity species)
- An estimated **160 000** tree seedlings planted



## Restoration

# 140 hectares of native forest under restoration in 2022

The second (2021-2022) planting season of the Tietê Forests projects restored 140 hectares and approximately 160 000 trees, and was finished in April 2022.

We don't need to water seedlings in Tietê; we plant in the rainy season, and applying hydrogel gives the seedlings enough moisture – mixed in the truck using river water

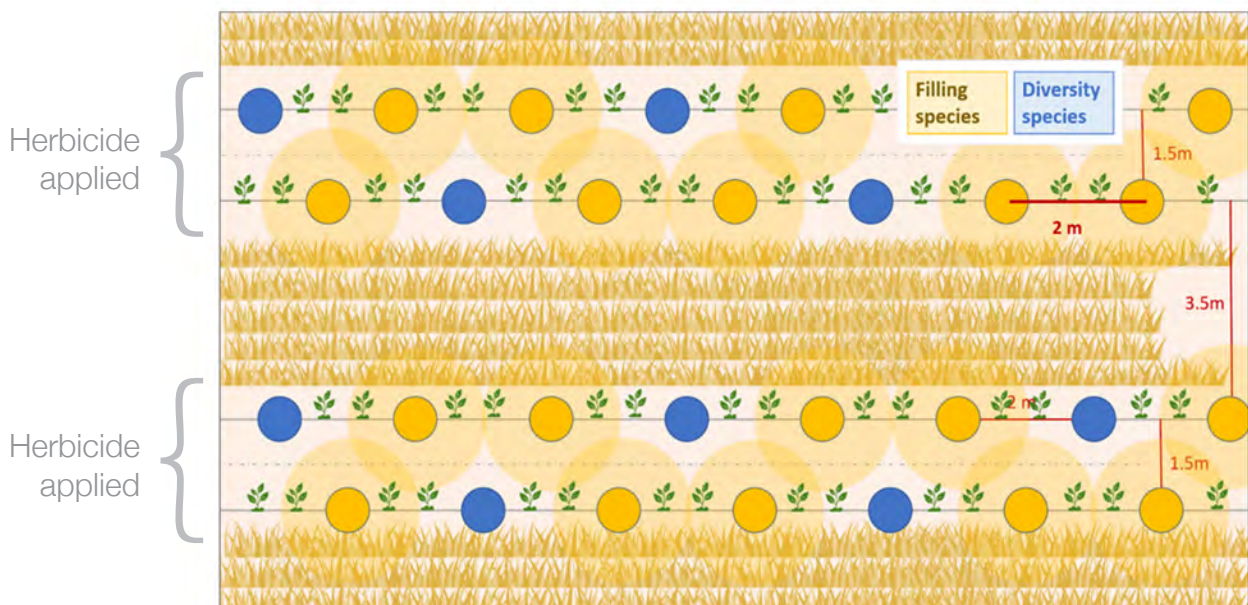
– before the seedlings are placed into the planting pits. In one day, the team can plant up to a thousand seedlings per person.

This rainy season (2022-2023) has been great! It's been raining every day, which is good news, as the third planting season finished very recently at the beginning of 2023.

The good rains mean we're expecting good survival rates.

As well as the planting, maintenance of the areas planted in planting seasons 1 and 2, including the control of ants and invasive grasses and mulching, is ongoing. The challenge when there's a lot of rain is that the

*Planting lines using the reduced herbicide approach*



grasses and weeds grow a lot as well!

Each year we are improving the arrangement of seedlings and controlling weeds. For example, in previous planting seasons, guandu had been planted to create a green manure and was intended to suppress invasive grasses and support the seedlings to grow. Yet even guandu became a competitor for nutrients! This is a good example of how we work with our partners to adapt our restoration approaches based on monitoring and evaluation.

Invasive grasses are incredibly challenging for the young seedling survival, competing for all the water, nutrients and space, and this is a challenge for most restoration in Brazil. We tested several different techniques to identify how to balance effective restoration and survival rates with significantly reduced herbicide use (read more about this in the [2021 yearly update](#)) and are now monitoring progress.

## The nursery

The AES Nursery in Promissão has 10 employees, a herbarium (a big library of seeds) and even a fish conservation activity! Producing a million high quality plants per year of up to 120 different species, with around 80 species being raised at any one time, the nursery is a sight to behold, with seedlings as far as the eye can see!



## Why is planting here so complicated?

The planting team of 30 people is working with a huge variety of seedlings – 80 different species in total during 2022 – that all have to be planted in the right layout to ensure the right trees are in the right places and will support each other rather than competing for resources. The nursery workers need to ensure they not only grow the right ones but then already sort them into the right order, so that the field workers don't have to think about what they plant where. This requires a lot of preparation and planning, which makes it more difficult operationally – but of course is very good from an ecological perspective!

Seedlings remain in the nursery from 3 to 9 months, depending on the species.

To stock the nursery, CEIBA collects seeds using a 'grabber' – they don't climb trees due to safety, and to avoid damage. This is a full-time job and happens all year. They have to go through thousands of seeds and only keep the high quality ones, and only take 50% of the



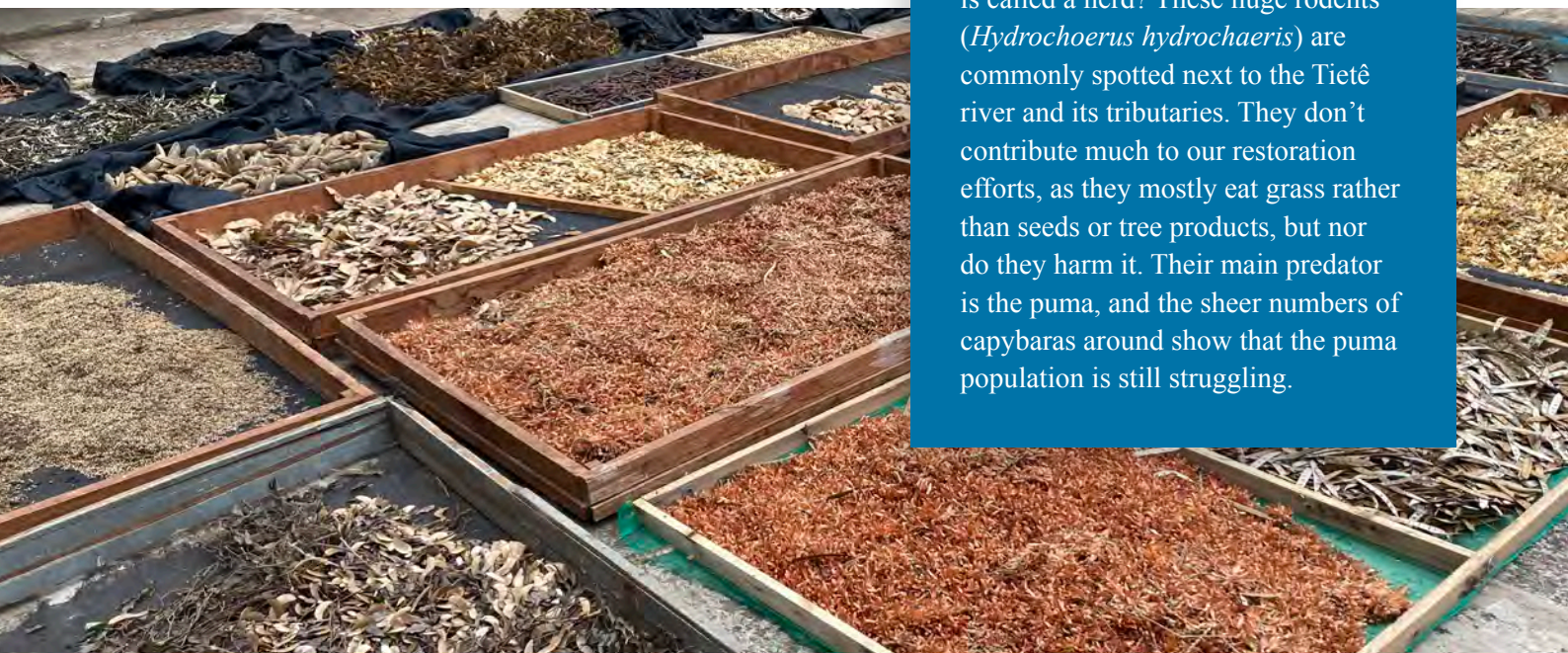
*Our restoration areas (two are outlined in yellow here) are very narrow compared to the vast fields of crops which dominate the landscape, where all sorts of pesticides are used.*

seedlings from any one tree so that the rest remain in nature.

Species have very different germination processes. Some need to be dried; others might need to be stamped on first to break the shells. Some seeds also germinate when passing through the gut of an animal, so that process has to be mimicked by scratching the seeds. Some seeds are stored in a fridge, and can be stored up to a year depending on the species and dormancy of the seed.

Some seeds are germinated in the ‘germination house’ – this happens for the more difficult cases. After they germinate they are then transferred to plastic tubes. This is a very delicate process, and it’s usually women who do this work. The soil is prepared by mixing it with a slow-releasing

*Seeds drying at the nursery*



## Our largest living rodents

Did you know a group of capybaras is called a herd? These huge rodents (*Hydrochoerus hydrochaeris*) are commonly spotted next to the Tietê river and its tributaries. They don’t contribute much to our restoration efforts, as they mostly eat grass rather than seeds or tree products, but nor do they harm it. Their main predator is the puma, and the sheer numbers of capybaras around show that the puma population is still struggling.



## Species in the spotlight: *Schinus terebinthifolia*

This is the Brazilian peppertree or rose pepper (*Schinus terebinthifolia*). Native to the Atlantic Forest in Brazil, it is a species that grows relatively easy across a wide range of environmental conditions, such as both wet or dry soils. We plant it in both our Tietê and Pontal projects.

Although it is not a true pepper, its dried drupes are often sold as pink peppercorns. The seeds can be used as a spice, adding a pepper-like taste to food. Less often they are sold pickled in brine, when they take on a dull, almost green hue. This species also produces nectar used by native insects and bees, which also makes it a good species for honey producers.

fertilizer. AES is experimenting with a paper machine to have cones made of paper instead of plastic tubes.

As the seedlings get older, there is a process of ‘robustification’: they are brought to a place where they can acclimatize and get treated a bit less gently – receiving more sun or less water, for example. This helps them to get ‘ready’ for the harsh outside world in the field. If they are too pampered they won’t survive. Some will die there: it’s better if the weak ones die in the nursery rather than in the field.





## Livelihoods

### Agroforestry restoration on private property starts

After being delayed by COVID, the new agroforestry programme with small farmers had a very successful launch in 2022.

Dandara Rural Settlement is 18km from Promissão, and home to 350 families with an average farm size of 14.5 ha. This is very small compared to most other farms in this landscape where most landowners own huge areas of land of thousands hectares or more. The Dandara rural settlement was established in collaboration with the Movement of Landless Rural Workers (MST) and has a strong focus on agroecology. MST has a national plan to “Plant Trees and Produce Healthy Food”, aiming to plant 100 million trees across Brazil.

Our original target here for 2022 was 20 families dedicating 1 ha each to agroforestry. Initially there was some skepticism about agroforestry, due to an older programme that created the agroforestry plots too far from their homes and did not provide enough technical support. In our programme, the agroforestry plots are set up on or close to the families’ homesteads, at the farmers’ request, and there will be continuous support from NACE-PTECA, an extension group from the University of São Paulo. Moreover, all the participating farmers do the agroforestry planting together, helping each other out in a collective movement.



### Agroforestry can be hard work!

Some people in Dandara didn’t have the labour available to take on agroforestry – they are getting older and their children have left. To convince people to work by hand is quite hard, especially as Brazil is quite mechanized in its farming. One solution is to focus on small areas, no bigger than one hectare each, that are very close to the house. Irrigation systems are needed, but perhaps more importantly, continuous motivation and support is needed so that the families can keep working on and benefiting from their agroforestry systems.



By the end of 2022, 16 families are involved in our programme, each dedicating between half a hectare to 1 ha on each farm, totalling 14 ha in all. The participating farmers finished setting up the last of the plots by the end of January 2023. An additional 16 ha of riparian (riverbank) areas within Dandara have also been placed under restoration to stabilise soil and protect the riverbank from erosion.

Most of the 16 farmers are members of the women-led COPROCAM cooperative, who already have a market chain established to sell their products, supporting each other in all aspects of production and marketing. They are very optimistic about this project, and looking forward to seeing what the future will bring.

To keep motivation high, the NACE-PTECA team will hold engagement workshops in Dandara every two months and support post-planting activities, which are often the most difficult to keep up. An agroforestry system requires lots of pruning to keep the system healthy and productive.

The 16 ha of restoration in the riparian (riverbank) areas



## An established agroforestry system

This is a farm belonging to one of the Dandara farmers who took part in the older agroforestry project run previously in the settlement. His six-year-old agroforestry system, though not properly managed, produces many fruits such as mango, lime, tangerine and acerola cherry. Farmers who adopt these production systems with the support of WeForest and AES will achieve greatly improved incomes through the commercialization of high-value organic fruits.

of Dandara was prepared and fenced by CEIBA, but the planting has been done by the same landowners that are taking part in the agroforestry programme. It's interesting to note that there is quite a lot of demand for restoring the land back to native forest here, as farmers in Dandara settlement know it will help restore the water cycle. They've seen that there is less water today than back in the days when there was still a lot of forest around.







## What's Next?

- Defining the next areas of land for restoration will be done during the year, and planting will start in November or December 2023, depending on the rain.
- We're evaluating how other activities related to restoration could support local people, particularly the younger generation, such as seed collecting.
- An exchange workshop between the Tietê Forests and our project in Pontal will take place in June.

*This puma was spotted near one of AES's older restored sites. This is very encouraging, as pumas are struggling. They have been seen in cities recently, which is not a good sign. Sugarcane fields provide good hiding places, but there's very little of their natural habitat remaining.*

## How do we know our restored forests are growing and making an impact?

Every hectare under restoration is mapped with GPS points to generate polygons (areas on a map) that are assigned to sponsors. Local consultants carry out annual vegetation assessments in the first 2-3 years after planting to check survival rates, biodiversity and how the canopy is developing. We plan to have remote-sensing-based analysis of tree cover performed periodically, to make sure all planted areas develop a closed canopy.

We also measure our social impact by keeping records of the number of people involved in the agroforestry systems and the amount of fruit they're producing and income they're receiving. We track the number of local people hired by CEIBA and in the AES nursery.

Please visit our [What We Do](#) webpage for more information.



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

*Thank you for supporting the Tietê Forests project!*