Amigos de Iracambi (Iracambi) is a non-profit registered in the US (501(c)(3)) and Brazil, situated in the Serra do Brigadeiro region of Minas Gerais, in the Atlantic Rainforest. It’s one of the most important biodiversity hotspots on the planet, but for years the combination of continued deforestation and unsustainable farming practices together with accelerating climate change have resulted in increasingly severe droughts, significantly affecting the regional economy.

Iracambi has been working on forest restoration for the past twenty-one years, and our flagship program Forests4Water focuses on restoring forests and providing a measure of environmental education to local farmers. The program demonstrates that forest conservation is completely compatible with productivity, and our decades of work have resulted in many technical improvements. To date we have planted 160,000 trees, involving dozens of farm families and more than two thousand students and researchers from across the world.

This report outlines the data and results of our reforestry program between 2015-2020, showing how the program has evolved and what is its future potential.

Enjoy the read!

September 2021
Forests4Water started in 2015 as a result of farmer-led requests for help with planting trees on their properties. It was a period of severe drought in the region which led to several springs drying up, but also caused increasing numbers of local farmers to prioritize environmental restoration, so that they would never again suffer from lack of water.

This is how the program began, and, differently from previous restoration efforts, Forests4Water focused on protecting and restoring water, with the active participation of the farmers themselves. Over the years, the program was adapted and improved, as we shall see below.

In the first two years (2015 and 2016,) we distributed 7,035 native tree seedlings to 28 local farms. Following this early acceptance both from farmers and donors, the program was expanded in 2017 to increase capacity in the forest nursery and provide a better level of follow up, and a total of 4,131 seedlings were donated to 23 farms.

But, in spite of the increased number of seedlings donated, we quickly understood that many of them were not surviving. So from 2018, instead of simply donating seedlings we started to work alongside the farmers, planting the seedlings together. This proved to be essential to their survival, and was made possible through an increase on funds. We also took control of the whole process before planting, from collecting data on the forestry plots to undertaking soil analyses, correcting the PH of the soil and using organic fertilizer.

That same year we partnered with the local water company in analyzing the water quality on each of the 31 farms involved in the program, and to our surprise, only two farms were producing water that was considered to be up to standard for human consumption. In 2018 we also started to monitor and maintain the seedlings, working with our forestry staff and also providing small financial incentives to the farmers to help with the costs. Our team began to visit the farms every three months, to photograph and record tree growth, and cut the weeds and fertilize the seedlings. This resulted in a significantly higher survival rate – 70% of the 6000 seedlings planted.

In 2019 we continued planting, but sadly were unable to take water samples or carry out monitoring and maintenance - due to a lower level of financial support. As a result of this, the survival rate of the 4000 seedlings planted dropped to around 50%. Things improved considerably in 2020 allowing us to continue planting, and carrying out maintenance activities five times a year for two years, raising the survival rate to nearly 90% - by far the best to date.

This report reinforces the importance of understanding the whole process of restoration, if we are to give the seedlings the best possible chance of survival. In the following pages we’ll go into further detail and present data for the period 2015-2020.
THE REFORESTRY PROCESS

The process begins with visits to those farms whose owners are interested in reforestry. During these visits we explain how the program works, and we evaluate the context of the property, collect data and measure the area to be reforested.

After the initial visit, we select the properties that will participate in the program and draw up detailed plans. Participating farms are selected in order of priority, depending on the urgency of the situation. We then define the areas of water catchment to be reforested, collect data, and discuss species selection depending on topography, soil type and vegetation cover (pasture, scrub woodland, swamps, etc.)

During the rainy season – October through February, we start preparations for planting, clearing ground cover, digging holes, correcting soil acidity and adding organic fertilizer. This is followed by planting and maintenance – weeding and clearing the competing vegetation. We continue carrying out maintenance for two years until the seedlings are well established, and we insist that reforestry areas are fenced to protect the young trees.

After planting we upload to our Geographical Information System (GIS) the data previously collected through using the Collector. Our maps can be consulted here. https://iracambi.maps.arcgis.com/home/webmap/viewer.html?webmap=baca060291d24b75a21810f3c5926dda

Our restoration process involves planting different varieties of tree together, recreating as closely as possible conditions in naturally occurring forests. We also use the successional model, using species from differing ecological niches, Pioneer species, (quick growing and tolerant to sunshine,) provide shade to successional and climax species. Mixing species in this way usually produces good results in terms of seedling survival and growth and consequently in successful protection of water resources.
2015

2,000 SEEDLINGS PLANTED from our forest nursery, raised from seeds collected from healthy forest trees.

5 FARMS

2016

5,035 SEEDLINGS PLANTED from our forest nursery, raised from seeds collected from healthy forest trees.

23 FARMS
2017

67

SPECIES

species of native trees including pioneer, successional and climax species, as well as some fruit trees.

4,131

TREES PLANTED

from our forest nursery, raised from seeds collected from healthy forest trees. Seedling height at planting varied from 20-70 cm.

3

COUNTIES

Muriaé, Rosário da Limeira and Ervália.

23

FARMS

between 30 - 990 seedlings planted on 23 farms.
PARTICIPATING FARMERS

**Muriaé/Belisário, Minas Gerais**
Luis Montino, Pedra Alta, 100 seedlings
José Paulo, Santa Lúcia, 100 seedlings
Sebastião, Santa Lúcia, 30 seedlings
José Domingos, São Thomé, 200 seedlings
Silvano/Margarida, São Thomé, 100 seedlings
Edivaldo, São Thomé, 250 seedlings
Silvério, São Thomé, 50 seedlings
José Milton, Graminha, 300 seedlings
Leandro Santana Moreira, Graminha, 250 seedlings
Toninho/Maria José, São Geraldo, 520 seedlings
Fabiano, Santa Catarina, 100 seedlings
Vivaldo, Estrada Graminha-Belisário, 100 seedlings
Lourdes Calais, Fazenda Ribada, 200 seedlings
Iracambi Ltda, São Geraldo, 990 seedlings

**Ervália, Minas Gerais**
Ramon Franco, zona rural, 111 seedlings

**Rosário da Limeira, Minas Gerais**
Maria das Graças, Santo Antônio, 200 seedlings
Joanes, São Pedro, 200 seedlings
João Paulo, São Pedro, 200 seedlings
Medeiros, Godinhos, 40 seedlings
Lúcia, São Pedro, 30 seedlings
Silvano, Godinhos, 20 seedlings
Nelson, Fazenda Palmeiras e Caetano, 20 seedlings
Hilda, Estiva, 20 seedlings

**Testimonial from Lourdes Calais:**
“When we started to run short of water on the farm we realized that we needed to restore the spring if we were going to survive. So we started the hard work of protecting and recuperating the spring. Our partnership with Iracambi helped a lot and today we’re proud to say that it is possible to recuperate a spring. Congratulations, Iracambi, on your brilliant work.”
**TREE SPECIES PLANTED**

Abacate, *Persea americana*  
Açoiita Cavalo, *Luehea divaricata*  
Adrago, *Croton urucurana*  
Ameixa, *Prunus domestica*  
Angelim coco, *Andira anthelmia*  
Angico Branco, *Anadenanthera colubrina*  
Angico Vermelho, *Anadenanthera macrocarpa*  
Araça Roxo, *Psidium myrtoides*  
Araúca, *Araucaria angustifolia*  
Barbatimão, *Stryphnodendron adstringens*  
Biriba, *Anonna mucosa*  
Boleira, *Joannesia princeps Vell*  
Canafistula, *Cupania vernalis*  
Canafistula, *Peltophorum dubium*  
Canjerana Miúda, *Cabralea canjerana*  
Canjiquinha, *Rhamnus sphaerosperma*  
Capoeira Branca, *Solanum mauritianum*  
Carambola, *Averrhoa carambola*  
Caroba da flor verde, *Cybistax antisypilitica*  
Castanha do Maranhão, *Bombacopsis glabra*  
Chuva de Ouro, *Cassia ferruginea*  
Coco Jeriva, *Syagrus romanzoffiana*  
Embaúba, *Cybistax antisyphilitca*  
Fedegoso, *Senna macranthera (Collad.)*  
Fedegoso do Mato, *Senna silvestris*  
Garapa, *Apuleia leiocarpa*  
Goiaba, *Psidium guajava*  
Graviola, *Annona muricata*  
Guabiroba, *Campomanesia xanthocarpa*  
Guapuruvu, *Schizolobium parahyba*  
Imbiruçu, *Pseudobombax simplicifolium*  
Inga Quatro Quina, *Inga vera willd*  
Ingá Banana, *Inga laurina (sw willd)*  
Ingá Cipó, *Inga edulis*  
Ipê preto, *Handroanthus arianea*  
Ipê Roxo, *Handroanthus impetiginosus*  
Jaboticaba, *Plinia cauliflora*  
Jaca, *Artocarpus heterophyllus*  
Jacaré, *Piptadenia gonoacantha*  
Jambo Rosa, *Syzygium jambos*  
Jussara, *Euterpe edulis*  
Laranja, *Citrus X sinensis*  
Lichia, *Litchi chinensis*  
Manga Espada, *Mangifera indica L.*  
Manga Ouro, *Mangifera indica L.*  
Mulungu, *Erythrina verna*  
Oiti, *Licaria tomentosa*  
Olho de Cabra, *Ormosia arborea*  
Orelha de Macaco, *Enterolobium contortisiliquum*  
Papagaio, *Aegiphila sellowiana Cham.*  
Pata de vaca com espinho, *Bauhinia forficata*  
Pau Viola, *Cytharexyllum myrianthum*  
Pêssego, *Prunus persica*  
Pitanga, *Eugenia uniflora L.*  
Quaresmeira, *Tibouchina granulosa*  
Quebrada Foce, *Mimosa lacticifera*  
Saducaia, *Lecythis pisonis*  
Sete Casca, *Samanea tubulosa*  
Sibipiruna, *Caesalpinia pluviosa*  
Sobral, *Colubrina glandulosa Perkins Sucurujuva*  
Sombrêro, *Clitoria fairchildiana*  
Urumuc, *Bixa orellana L.*  
Uva do Japão, *Hovenia dulcis*  
Uvaia, *Eugenia pyriformis*  
Véludo Branco, *Guettarda viburnoides*  
Vermelho, *Hirtella glandulosa*
2018

**37**
Species of native trees, pioneers, succession and climax species as well as fruit trees.

**6,000**
Trees planted from our forest nursery, raised from seeds collected from healthy forest trees.

**3**
Counties: Muriaé, Rosário da Limeira and Ervália.

**31**
Farms: between 31 - 705 seedlings planted on 31 farms.

**70%**
Survival rate: seedlings planted by the Iracambi team after preparing the land, collecting soil samples, correcting the soil and using organic fertilizer. Maintenance carried out three times a year.
PARTICIPATING FARMERS

**Muriaé/Belisário, Minas Gerais**
- Lourdes Calais Laia, 200 seedlings
- Frei Gilberto Teixeira, 60 seedlings
- Toni, 80 seedlings
- Hideraldo Sebastião e de Mendonça, 210 seedlings
- Regina Gomes de Paula Silva, 350 seedlings
- Vivaldo, 69 seedlings
- José Antunes, 410 seedlings

**Ervália, Minas Gerais**
- Rogéria Castro, Godinhos, 200 seedlings
- Antonio Teixeira, 480 seedlings
- Kamilo Fonseca e Castro, 105 seedlings
- Luiz Antonio, 55 seedlings

**Rosário da Limeira, Minas Gerais**
- Robin Le Breton, Graminha, 600 seedlings
- João Paulo, São Pedro, 215 seedlings
- José Milton da Rocha, Graminha, 40 seedlings
- Leandro Santana, Graminha, 170 seedlings
- Claudinéia, 70 seedlings
- Dagmar, 60 seedlings
- Edinho, 31 seedlings
- Eloy Clemente, 205 seedlings
- Felipe, 48 seedlings
- Flávio, 705 seedlings
- Jair Paula, 180 seedlings
- Maria Gomes, 150 seedlings
- Markin, 106 seedlings
- Nelson Cabral Pereira Junior, 49 seedlings
- Olyvier, 155 seedlings
- Rodrigo Ramalho, 100 seedlings
- Rosilene, 170 seedlings
- Sebastião da Laura, 200 seedlings
- Felipe, 178 seedlings
- Nelio, 349 seedlings

TREE SPECIES PLANTED

- Abacate, Persea americana
- Adrago, Croton urucurana
- Algodão, Gossypium
- Amora, Morus alba
- Angico Vermelho, Anadenanthera macrocarpa
- Araçá Roxo, Psidium myrtoides
- Araticum-Cagão, Annona montana
- Bico-de-pato, Machaerium nyctitans
- Biriba, Annona mucosa
- Camboatá, Cupania vernalis
- Candeia, Eremanthus erythropappus
- Canela, Cinnamomum verum
- Canjerana Múda, Cabralea canjerana
- Caquizeiro, Diospyros kaki
- Cassia Rosa, Cassia grandis
- Castanha do Maranhão, Bombacopsis glabra
- Coco Jeriva, Syagrus romanzoffiana
- Cutieira, Joannesia princeps
- Fedegoso, Senna macranthera (Collad.)
- Fruta do Lobo, Solanum lycocarpum
- Goiaba, Psidium guajava
- Guapuru, Schizolobium parahyba
- Ingá Peba, Inga macrophylla
- Ipê Rosa, Handroanthus heptaphyllus
- Jatobá, Hymenaea courbaril
- Jenipapo, Genipa americana
- Jussara, Euterpe edulis
- Mamão, Carica papaya
- Manga Espada, Mangifera indica L.
- Mulungu, Erythrina verna
- Pata de vaca, Bauhinia unguulata L.
- Pata de vaca com espinho, Bauhinia forficata
- Pitanga, Eugenia uniflora L.
- Sapucaia, Lecythis pisonis
- Sibipiruna, Caesalpinia pluviosa
- Tamboril, Enterolobium contortisiliqum
- Urucum, Bixa orellana L.
2019

- **SPECIES**: 39 species of native trees, pioneers, succession and climax species as well as fruit trees.

- **TREES PLANTED**: 4,000 trees planted from our forest nursery, raised from seeds collected from healthy forest trees.

- **COUNTIES**: 2 counties—Muriaé and Rosário da Limeira.

- **FARMS**: 14 farms between 71 - 810 seedlings planted on 14 farms.

- **SURVIVAL RATE**: 50% seedlings planted by the Iracambi team after preparing the land, collecting soil samples, correcting the soil and using organic fertilizer.
PARTICIPATING FARMERS

Muriaé/Belisário, Minas Gerais
José Antunes, 321 seedlings
Regina, 775 seedlings
Lourdinha, 287 seedlings

Rosário da Limeira, Minas Gerais
João Paulo, 210 seedlings
Sebastião, 29 seedlings
Olyver, 150 seedlings
Eloy, 300 seedlings
Markin, 74 seedlings
Jair Paulo, 260 seedlings
Maria G., 303 seedlings
Rosilene, 221 seedlings
Claudineia, 71 seedlings
Wilson, 189 seedlings
Robinho, 810 seedlings

TREE SPECIES PLANTED

Abacate, Persea americana
Adrago, Croton urucurana
Amora, Morus alba
Angico Branco, Anadenanthera colubrina
Angico Vermelho, Anadenanthera macrocarpa
Araçá Roxo, Psidium myrtoides
Araticum-cagão, Annona montana
Cinco Folhas, Potentilla nepalensis
Copaíba, Copaífera langsdorffii
Coco Jeriva, Syagrus romanztsoffiana
Embaúba, Cecropia pachystachya Trécul
Fedegoso, Senna macranthera (Collad.)
Fruta do Lobo, Solanum lycocarpum
Goiaba, Psidium guajava
Guapuruu, Schizolobium parahyba
Ingá Peba, Inga macrophylla
Ipê Amarelo, Handroanthus albus
Ipê Roxo, Handroanthus heptaphyllus
Jabuticaba, Plinia cauliflora
Jaca, Artocarpus heterophyllus
Jacarandá, Jacaranda mimosifolia
Jacaré, Piptadenia gonoacantha
Jussara, Euterpe edulis
Limão-rosa, Citrus x limonia
Mamão, Carica papaya
Manga Espada, Mangifera indica L.
Pata de vaca, Bauhinia unguulata
Pata de vaca com espinho, Bauhinia forficata
Quaresmeira, Tibouchina granulosa
Sapucaia, Lecythis pisonis
Sete Cascas, Samanea tubulosa
Sibipiruna, Caesalpinia pluviosa
Sucupira, Pterodon emarginatus
Suinã, Erythrina velutina
Tamboril, Enterolobium contorsiliquum
Urucum, Bixa orellana L.
Uvaia, Eugenia pyriformis
Vinhático, Plathymenia foliolosa
**2020**

**SPECIES**
41
species of native trees, pioneers, succession and climax species as well as fruit trees.

**TREES PLANTED**
5166
trees planted from our forest nursery, raised from seeds collected from healthy forest trees.

**COUNTY**
1
Rosário da Limeira.

**FARMS**
7
between 350 - 1300 seedlings planted on 7 farms.

**SURVIVAL RATE**
89%
seedlings planted by the Iracambi team after preparing the land, collecting soil samples, correcting the soil and using organic fertilizer. Maintenance carried out five times a year for two years.
PARTICIPATING FARMERS

Rosário da Limeira, Minas Gerais
Bruno Nery, Graminha, 430 seedlings
Carla Faccina, Buracada, 1000 seedlings
Eduardo Senra, Graminha, 486 seedlings
Luiz Gusmão, Graminha, 1300 seedlings
Luiz Sodré, Graminha, 350 seedlings
Robin Le Breton, Graminha, 600 seedlings
Leandro Santana, 1000 seedlings

TREE SPECIES PLANTED

Abacate, Persea americana
Açaita Cavalo, Luehea divericata
Adrago, Croton urucurana
Ameixa, Prunus domestica
Angelim Coco, Andira anthelmia
Angico Branco, Anadenanthera colubrina
Biriba, Annona mucosa
Cafe, Coffea arabica
Canjerana Miúda, Cabrlea canjerana
Canjiquinha, Rhamnus sphaerosperma
Cassia Rosa, Cassia grandis
Castanha do Maranhão, Bombacopsis glabra
Chuva de Ouro, Cassia ferruginea
Cinco Folhas, Potentilla nepalensis
Copaíba, Copaifera langsdorffii
Coco Jeriva, Syagrus romanzoffiana
Embaúba, Cecropia pachystachya Trécul
Embiriqui, Pseudobombax grandiflorum
Fedegoso, Senna macranthera (Collad.)
Fruta do Lobo, Solanum lycocarpum
Goiaba, Psidium guajava
Ingá Peba, Inga macrophylla
Ipê Roxo, Handroanthus heptaphyllus
Jabuticaba, Plinia cauliflora
Jaca, Artocarpus heterophyllus
Jacaré, Piptadenia gonoacantha
Jenipapo, Genipia americana
Jussara, Euterpe edulis
Limão-rosa, Citrus × limonia
Mamão, Carica papaya
Manga Espada, Mangifera indica L.
Mulungu, Erythrina verna
Papagaio, Aegiphila sellowiana Cham.
Pata de vaca, Bauhinia ungulata L.
Pau Viola, Cytharexylum myrianthum
Sapucaia, Lecythis pisonis
Sibipiruna, Caesalpinia pluviosa
Urucum, Bixa orellana L.
Uvaia, Eugenia pyriformis
Vinhático, Plathymenia foliolosa
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