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cooplantas

Amplifying Stories of Agroecology Practices and Principles

Panela Cheia Agroecological Farm

The Production of Medicinal Plants (COOPLANTAS) is woman-led and dates back to 1995, when a collective of women from a rural settlement became interested in cultivating and commercialising medicinal plants. In 2000, they decided to transition to agroecology, and by 2008, the collective had established its headquarters for processing medicinal plants and had begun the process of organic certification.

The cooperative is located in a Land Reform Settlement of the Landless Workers' Movement (MST), a social movement dedicated to reclaiming access to land through land reform. The MST has long fought against the concentration of land in the hands of a few wealthy landowners, advocating for the redistribution of land to rural workers and families who have historically been excluded from land ownership. Settlements, like the one where Panela Cheia Agroecological Farm is based, are the fruit of years of activism against deeply entrenched patriarchal and colonial structures in Brazil. These settlements are not just spaces for sustainable agricultural production; they are also sites of resistance against a history of exploitation, social injustice, and exclusion. The movement has worked to address systemic barriers that have long denied marginalised groups - especially women, Afro-Brazilian communities, and smallholder farmers - their rights to land and resources. Today, the MST brings together over 1.5 Million people across 24 of Brazil's 26 states organised through democratic and decentralised decision-making, and it is the largest producer of organic food in the country. In this context, Land Reform Settlements act as catalysts for change, where futures can be collectively redefined and dignity, sovereignty, and social justice are reclaimed.

"I have chosen to work with agroecological practices with the dream that what I do can improve health and well-being, give hope to young people through education, and help shape a more conscious generation that cares for the environment," Nazaré, owner of Panela Cheia Agroecological Farm.

Foreword

Welcome to our project, where we strive to bring the 13 Principles of Agroecology to life for farmers and policymakers alike. Given that accessible information on this topic is limited, we are excited to present visually engaging leaflets which speak directly to you. Through captivating visuals and real-world examples, we aim to illustrate how these principles can be practically applied in various agricultural settings.

We have interviewed farmers who are already implementing these principles, and we are eager to share their stories with you. Our goal is to build an informative and inspirational case study repository that not only raises awareness but also fosters a deeper understanding of agroecology.

By focusing on easy-to-digest visuals and practical insights, we hope to make learning about and adopting agroecological practices both enjoyable and impactful for everyone involved in agriculture.

The 13 Principles of Agroecology

- Overview of the High-Level Panel of Experts' (HLPE) 13 Agroecology Principles.

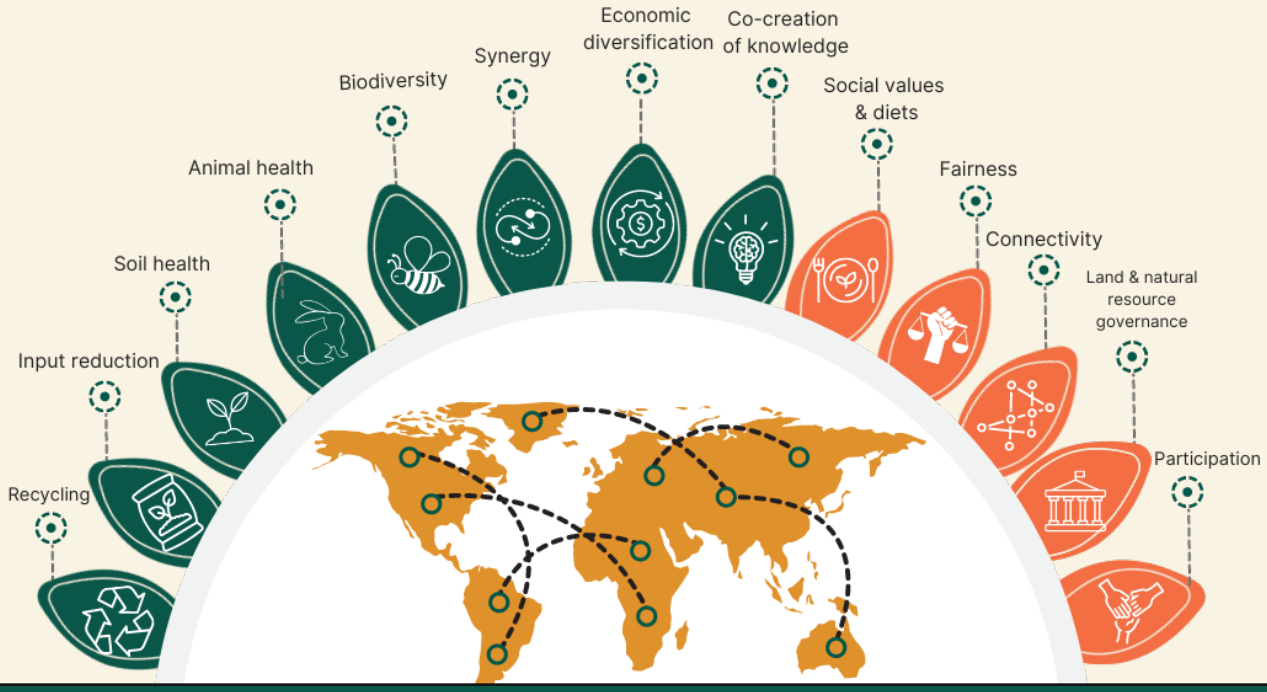


Table of Content

Nazaré's farm

Nazaré's farm is located in Itaberá's municipality and is one of the 35 farms represented in the Cooperative for the Production of Medicinal Plants (COOPLANTAS).

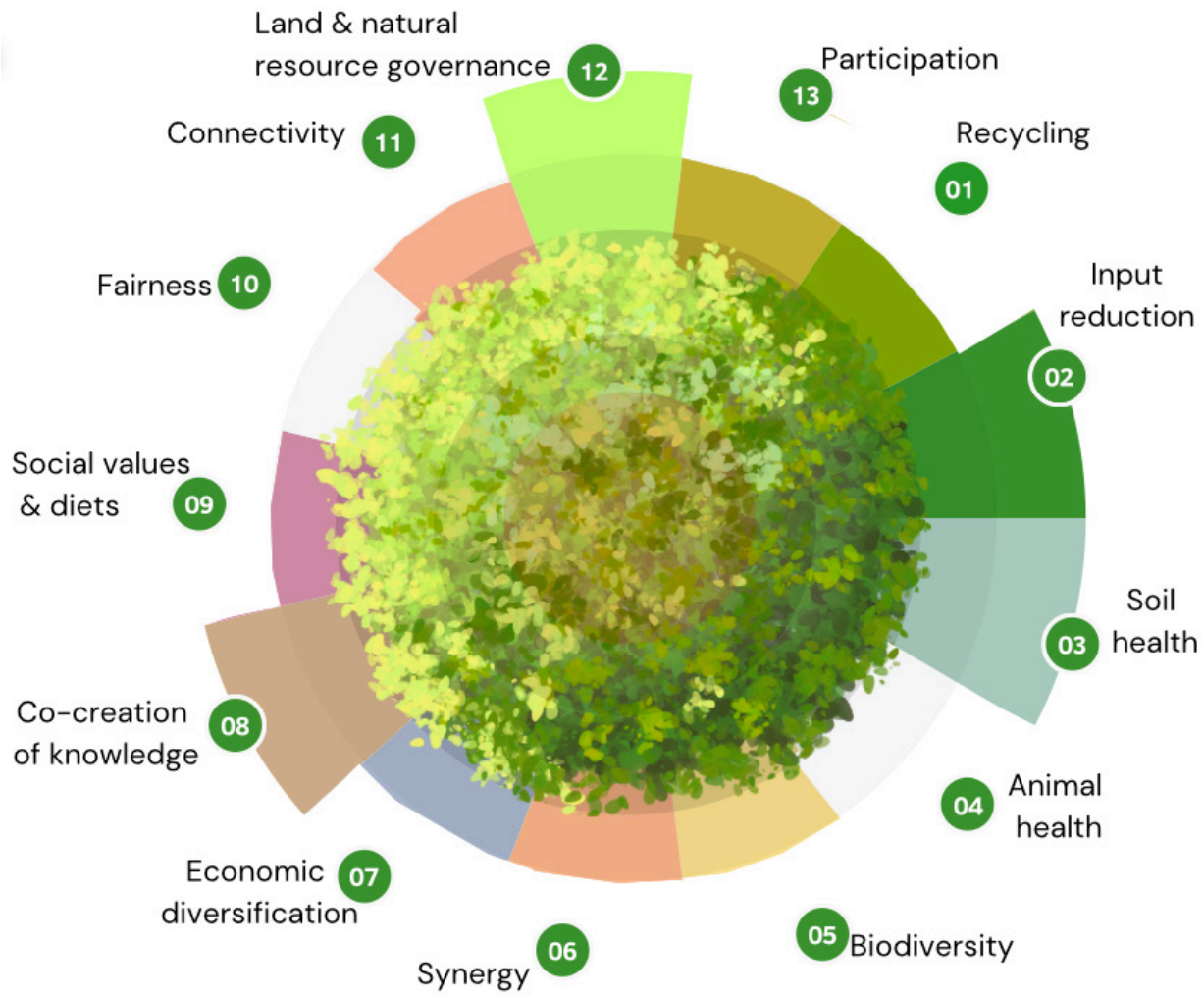
Utilised agricultural area in hectares	15.73
Occupational status	Nazaré splits her time between the family farm and COOPLANTAS, where she is involved in seedling production and serves as a member of the fiscal council.
Number of people working on the farm	Family farm of four managed by the parents who receive assistance from their adult children.
Agricultural certifications	IBD Organic (IBD) Brazilian Biodynamic Association (ABD) under a Participatory Guarantee System (PGS) Social Control Body (OCS)
Farmning activities	Horticulture, open air or in greenhouse: Cultivation areas are highly diversified with newer agroforestry systems where trees are mixed with vegetable gardens, while in more established systems, a wide variety of fruit trees coexist with native species.
Type of crops	Over 40 cultivars, including Sicilian lemon, Tahiti lime, orange, dwarf banana, silver banana, apple banana, gold banana, plantain, long banana, pink pepper tree, pear, apple, sugarcane, passion fruit, eggplant, chayote, Brazilian balm (Cordia verbenacea), aloe vera, tea tree, cowpea, papaya, cassava, organic corn, okra, purple castor bean, lavender, lemongrass (Cymbopogon citratus), peach, mango, avocado, burr gherkin, white bean, and green manure crops like Canavalia ensiformis and Cajanus cajan.

Agroecological integration

Agroecological integration corresponds to the degree of alignment of a farm with each of the 13 Principles of Agroecology, based on the Agroecology Assessment Framework. It can be understood as the boundaries within which agroecological farming operates, with a minimum of four core principles to be met: co-creation of knowledge, social values and diets, fairness, and participation.

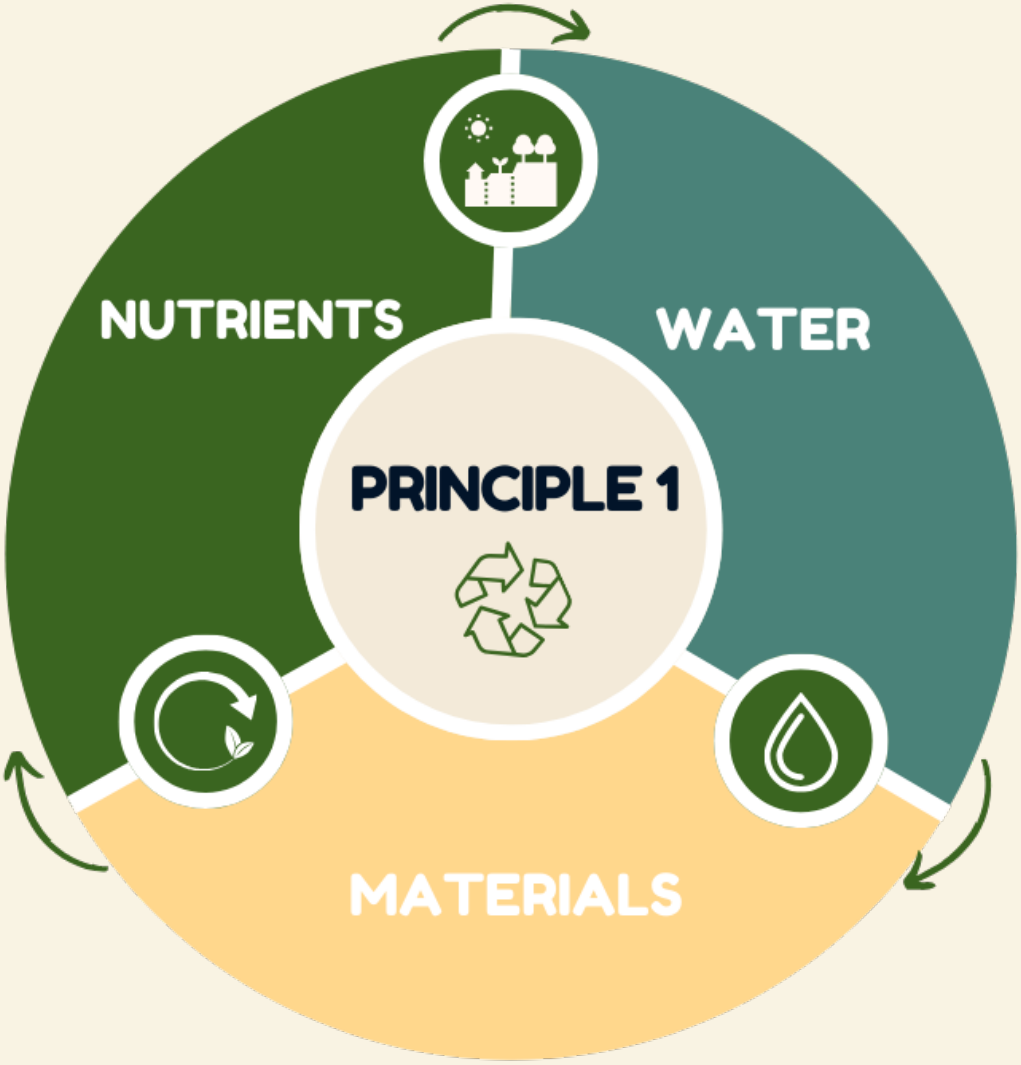
The agroecology principles encompass ecological, socio-cultural, technological, economic and political dimensions, aiming to ensure that agricultural activities do not degrade natural resources, disrupt ecosystems, or compromise food security and community wellbeing. By operating within these limits, agroecology aims to create a harmonious balance between farming, people and nature.

In this case study, agroecological integration is based on farmers' self-assessment of how ascale from 1 to 5, with 1 indicating no alignment and 5 indicating a strong alignment. Note that some principles might not be applicable.



Principle 1 – Recycling

Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and bioomas.



Manure used for fertilisation in community planting.

Materials. The farm primarily uses recyclable packaging for products marketed through COOPLANTAS, although some plastic is still used. Waste sorting is done throughout the cooperative.

Recycled paper packaging used by Cooplantas.

Nutrients. The farm works to close nutrient cycles by recycling essential nutrients—such as nitrogen, phosphorus, and potassium—back into the soil through the use of green manure, soil cover from prunings, biofertiliser, and organic turkey manure. Both internal and external sources of biomass play a key role in this process:

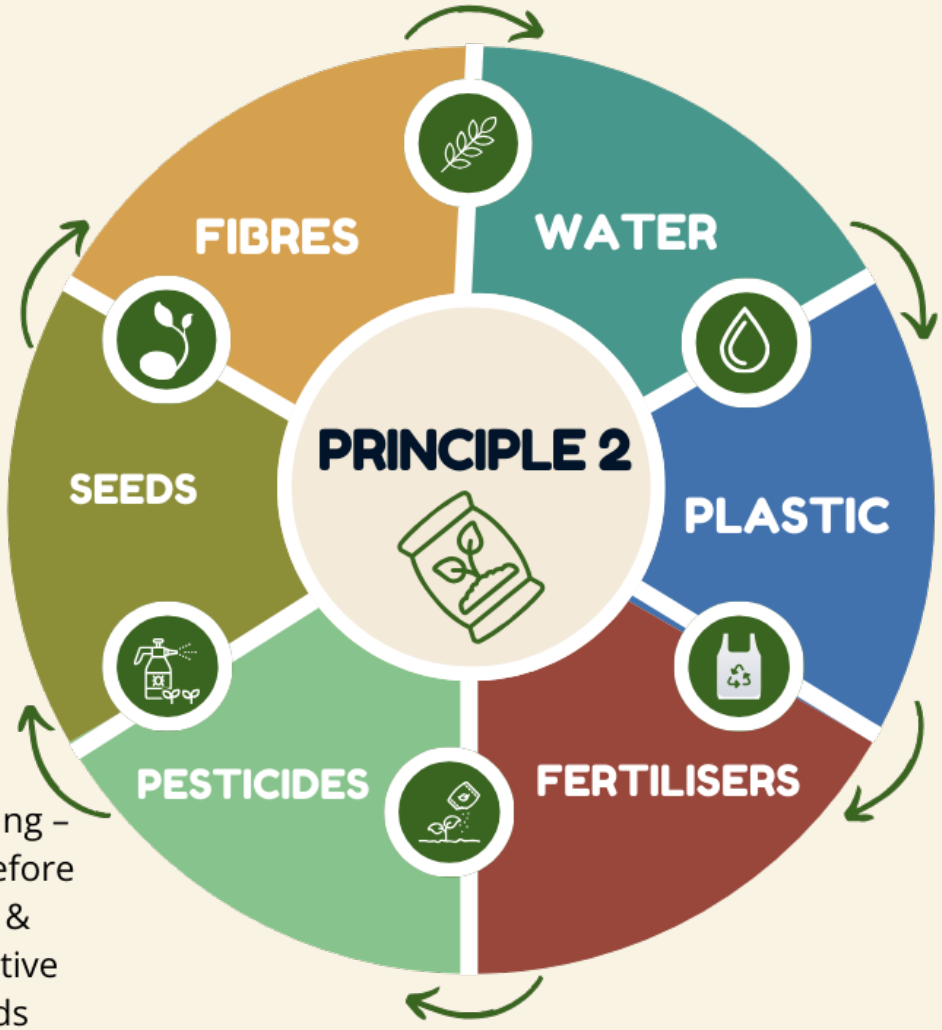
- Internal sources, such as brachiaria grass and prunings from native trees, help maintain a self-contained system by providing biomass that is grown, harvested, and used within the same production system.
- External sources include prunings donated by the city council and biodynamic preparations purchased through the Brazilian Biodynamic Association (ABD).

Water. Water is sourced from an artesian well that provides a steady supply of groundwater to meet the farm's current irrigation needs. In the future, the farm plans to build a rainwater harvesting system to supplement the artesian well.

Organic matter used for soil cover and nutrient cycling.

Principle 2 – Input reduction

Reduce or eliminate dependency on purchased inputs and increase self-sufficiency.



Overarching – Reduce before recycle & preventative methods

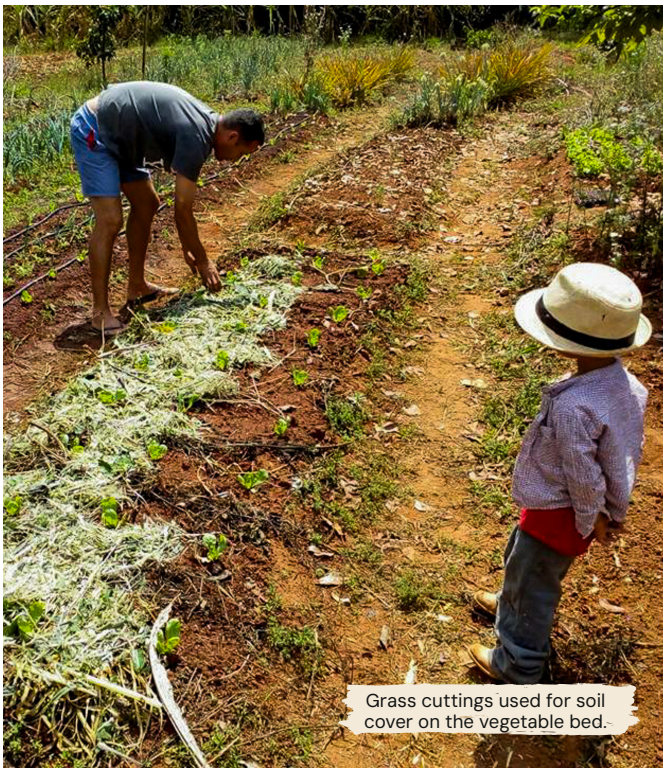
Agroforestry area with living soil cover and Cambuci pepper grown between rows.

Fertilisers and pesticides. The use of preventative and natural methods eliminates the need for synthetic fertilisers or pesticides:

- A highly biodiverse system naturally reduces pests through biological pest management.
- Nitrogen-fixing plants are used to support soil fertility and plant growth.
- A bordeaux mixture, a blend of copper sulphate and lime produced on-site, is used to protect plants from fungal diseases.
- Biodynamic preparations are used as part of the ABD certification requirements. One such preparation, “500 - Horn Manure”, boosts plant growth by enhancing microbial activity in the soil. It is made by filling a cow horn with fresh manure and burying it in the soil during autumn, allowing it to decompose naturally over the winter.

Water. Water use is reduced by using drip irrigation and natural mulch. Drip irrigation applies water directly to the plant roots in small amounts to avoid any waste through evaporation and runoff. Mulch, a layer of organic material spread over the soil around plants, helps retain moisture by slowing evaporation, insulating the soil, and preventing it from drying out.

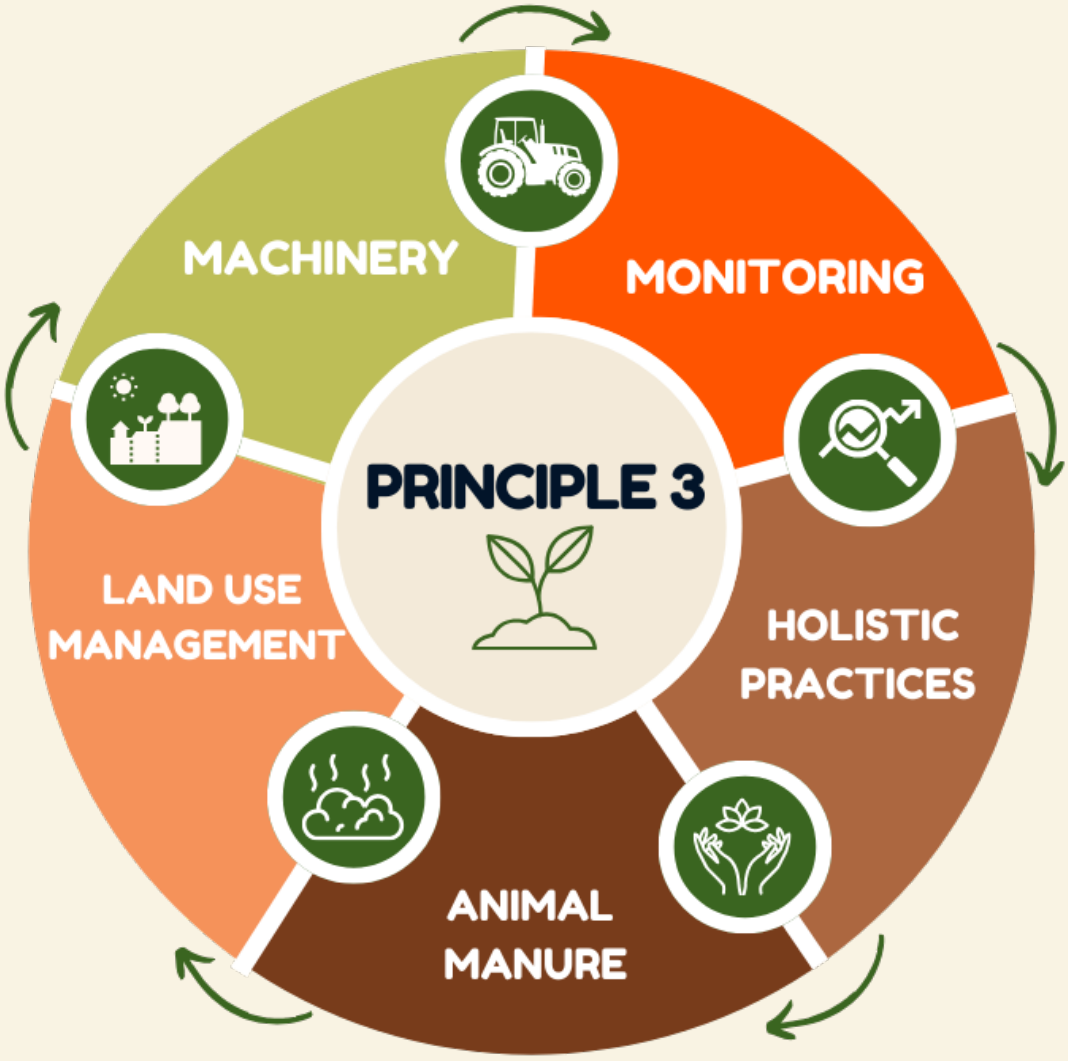
Fibre and building materials. The eucalyptus planted on the farm is widely used for construction purposes. The trees are harvested for wood which is used in fencing and other relevant purposes around the farm.



Grass cuttings used for soil cover on the vegetable bed.

Principle 3 – Soil health

Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and enhancing soil biological activity.



Holistic approach. Soil health is enhanced using holistic practices that work synergistically within the agroecological farm system. These practices include increasing species diversity, preserving native species and planting a variety of fruit trees. Practices such as the use of light-machinery, periodic crop rotations, contour ploughing, natural windbreaks, green manure and natural fertilisers help protect and enrich the soil.

Land use management. Soil erosion is prevented through the use of contour ploughing and windbreaks:

- Contour ploughing is a practice that consists in ploughing in harmony with the natural contours of the land. This technique allows to reduce soil erosion and water runoff which can be problematic in hilly landscapes.
- Windbreaks, made from densely planted napier grass, sugarcane, and banana plants, shield the soil from strong winds.

Seedlings planted in agroforestry interrows.

Community planting for new agroforestry system.

Monitoring. Soil health is assessed through visual indicators, including soil structure, texture, colour, and the presence of earthworms and indicator plants.

- The growth of guanxuma (Sida rhombifolia) can indicate low soil fertility and compaction. This shrubby plant naturally grows in low-fertility soils and its roots help soil aeration and recovery. Guanxuma is used as a soil health recovery method on the farm due to its natural properties.
- Black mucuna (Mucuna pruriens) has also been used for the same purpose but it is more invasive and difficult to manage.

Machinery. The farm uses light machinery, including a walk-behind tractor for tilling, a brush cutter for clearing vegetation, and a hand-operated soil drill for planting trees. These tools are compact and minimise soil disturbance, supporting sustainable land management.

Soil drill used to plant with minimal soil disturbance.

Principle 4 – Animal health

Ensure animal health and welfare.

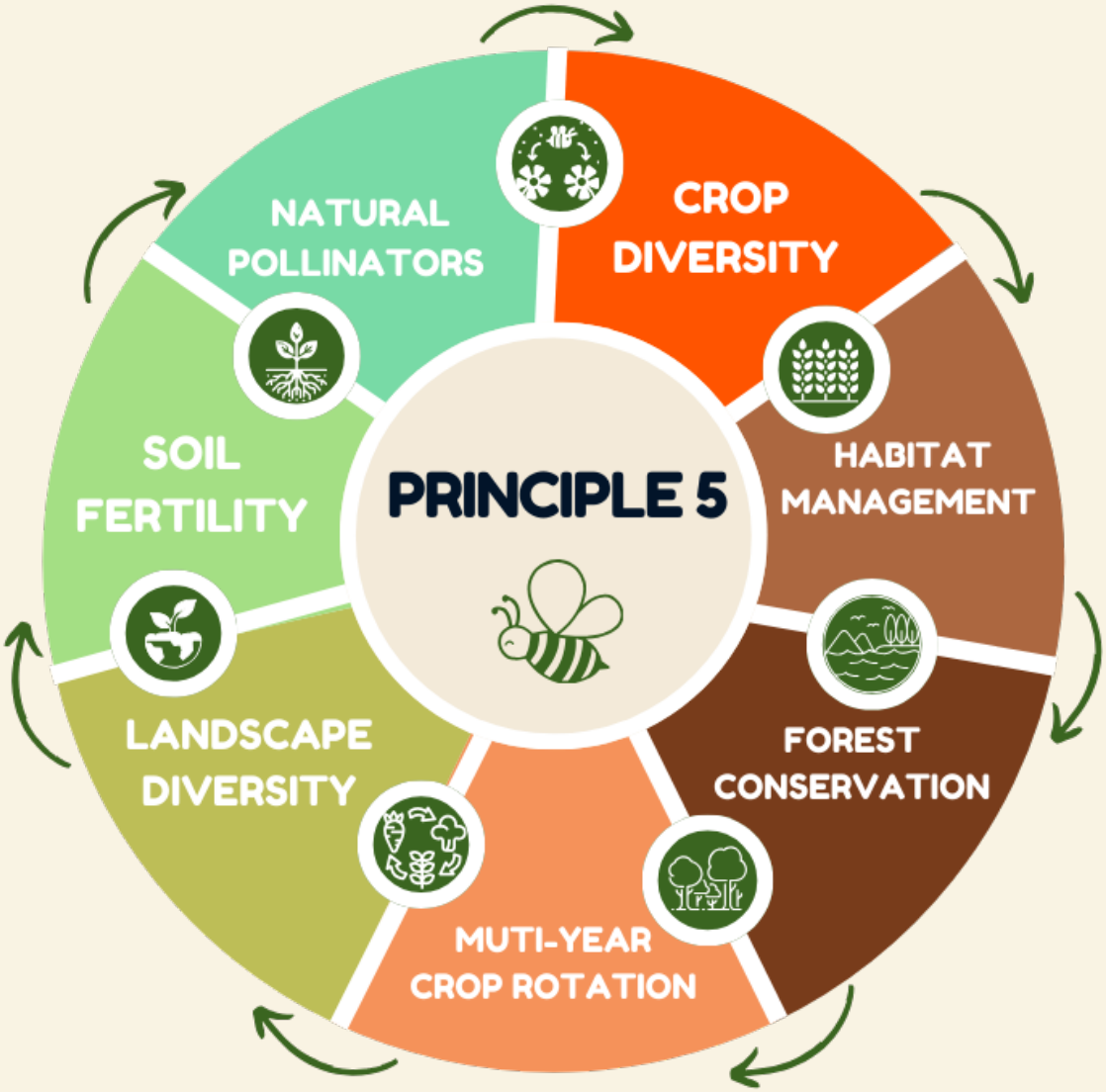
Integrated pollinator management. In the past, dairy cattle were raised on the farm in a paddock system, together with rabbits and chickens. In this system, the land is divided into multiple smaller enclosures which allow animals to rotate between pastures, reducing the pressure on the land and increasing animal health. Due to labour limitations however, the family decided to focus on horticulture.

The farm still keeps three horses for leisure activities and maintains several beehives for pollination and honey production. Jataí bees (Tetragonisca angustula) are raised on the farm, as their honey is known for its strong medicinal properties.

Bee hives in agroforestry.

Principle 5 – Biodiversity

Maintain and enhance diversity of species, functional diversity and genetic resources and thereby maintain overall agroecosystem biodiversity in time and space at field, farm and landscape scales.



Crop diversity. With over 40 different cultivars, the farm prioritises crop diversity while recognising the importance of including locally adapted varieties and native species. The “Criolo” corn is an example of a heirloom crop used on the farm.

Aloe vera in agroforestry.

Forest conservation. Conservation of forest fragments is an integral part of the agroforestry systems on the farm, where native tree species are preserved and grown alongside a diversity of other trees and crops. Currently, efforts are underway to restore a spring on the plot by re-planting native trees along the water’s edge to create protective borders.

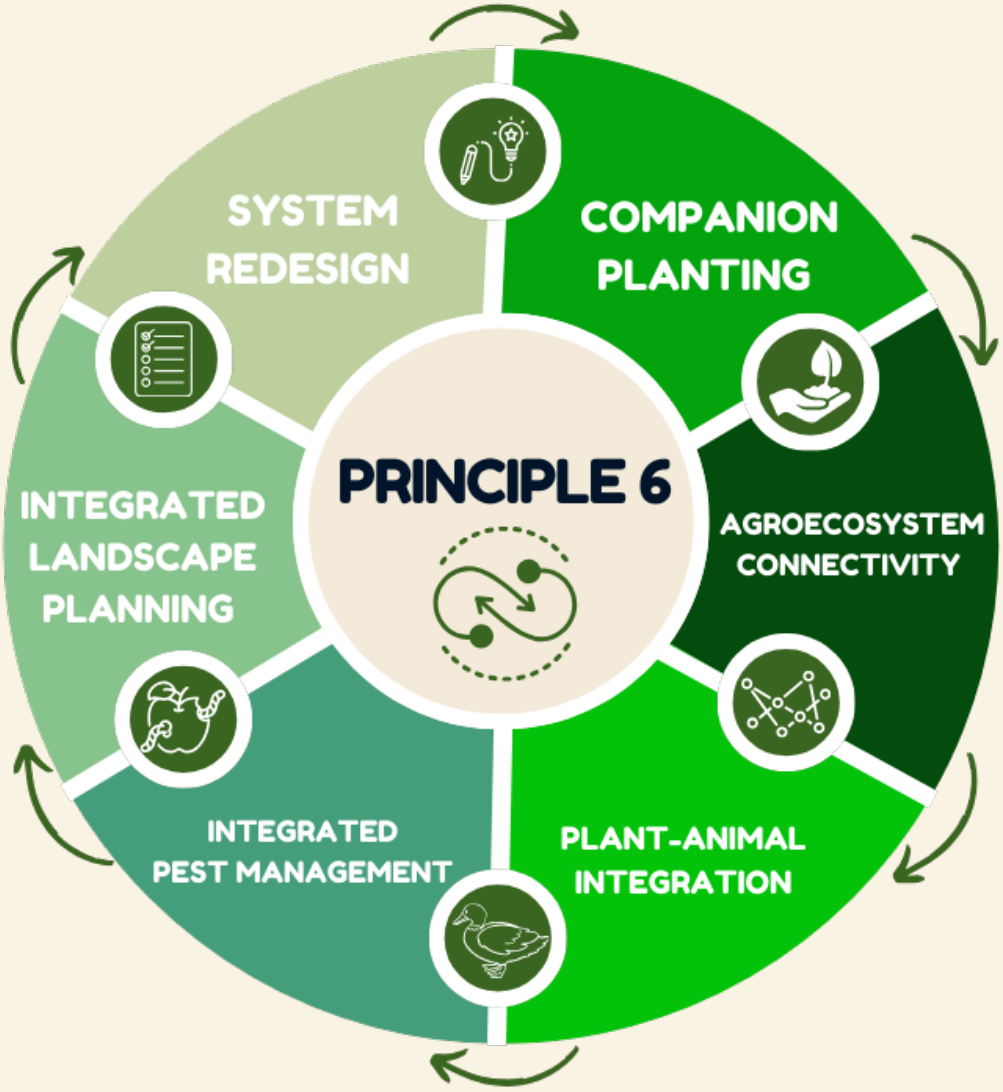
Natural pollinators. A diversity of flower species are planted to ensure that there is an abundant supply of nectar and pollen throughout the year. Focus is given to native species and species with a long flowering period such as margaridão (Tithonia diversifolia).

Chamomile in agroforestry.

Flower harvest.

Principle 6 – Synergy

Enhance positive ecological interaction, synergy, integration and complementarity among the elements of agroecosystems (animals, crops, trees, soil and water).



Medicinal plants, chives, and fruit tree seedlings between rows of Baleeira with soil cover.

Polycultures. The farm embraces polycultures, integrating food plants, medicinal herbs, and native trees to create a diverse, symbiotic environment.

System redesign. The farm's agroecological design optimises ecosystem services and synergies among all system elements. Each species' life cycle, light requirements and appropriate management type are considered to create harmonious relationships, strengthening the overall ecosystem resilience.

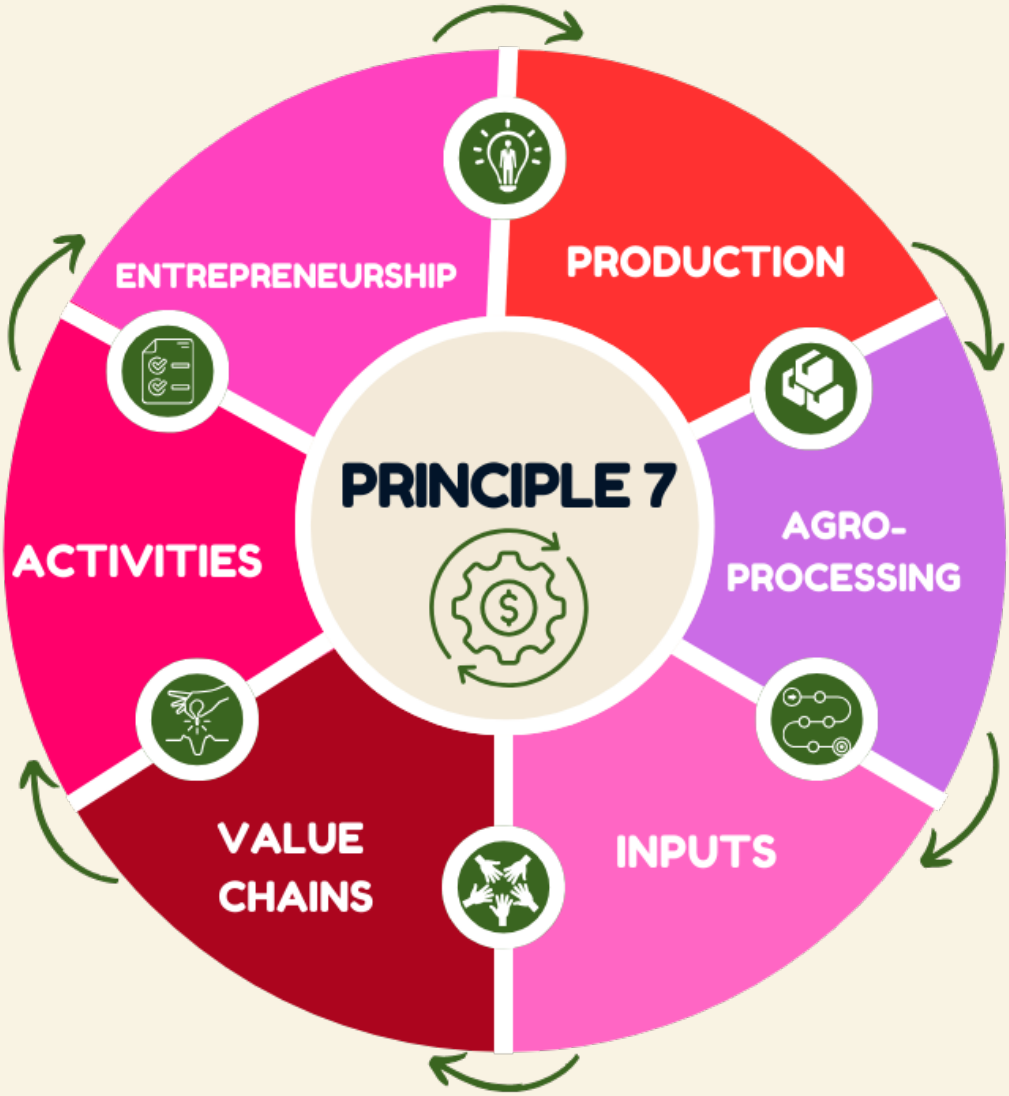
Soil-plant management systems. Soil-plant management systems include the pruning of trees for wood, the mowing of brachiaria grass, the incorporation of banana pseudostems and the mowing of green manure crops at the flowering stage.

- Tree pruning is done by selectively cutting tree branches which are left to decompose on the soil, adding organic matter.
- Periodically mowing brachiaria grass allows it to decompose in the soil, creating a natural mulch.
- Banana pseudostems, the plant stem left after harvest, provide multiple benefits when returned to the soil. Their decomposition helps retain moisture, provides nutrients and enhances microbial activity.
- Green manure crops are high in nutrients after the flowering stage and allowing them to decompose enriches the soil with nitrogen, phosphorus and other nutrients.

Experimenting with banana plants for biomass.

Principle 7 – Economic difersification

Diversify on-farm incomes by ensuring that small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.




Plant drying process.


Hibiscus (Hibiscus sabdariffa).

Activities. School visits are organised monthly, free of charge, to raise children's awareness of the crucial role of the environment, agroecology, agroforestry, food education, and sustainable planting techniques. Paid courses and lectures are also offered to the wider community, making the farm a destination for rural tourism.

Entrepreneurship. COOPLANTAS is a strong advocate for women and youth entrepreneurship which the farm owner, Nazaré, benefited from. The cooperative offered her training and employment opportunities that were otherwise unavailable in highly competitive cities like São Paulo. Nazaré completed several short - and medium - term training programmes in agroecology, agroforestry, and medicinal plants, which ultimately enabled her to start her own enterprise within the cooperative.

Through its activities, COOPLANTAS seeks to raise the profile of women's contributions in rural areas, promote economic autonomy, combat domestic violence, and advocate for gender equality.


Collective work at COOPLANTAS.

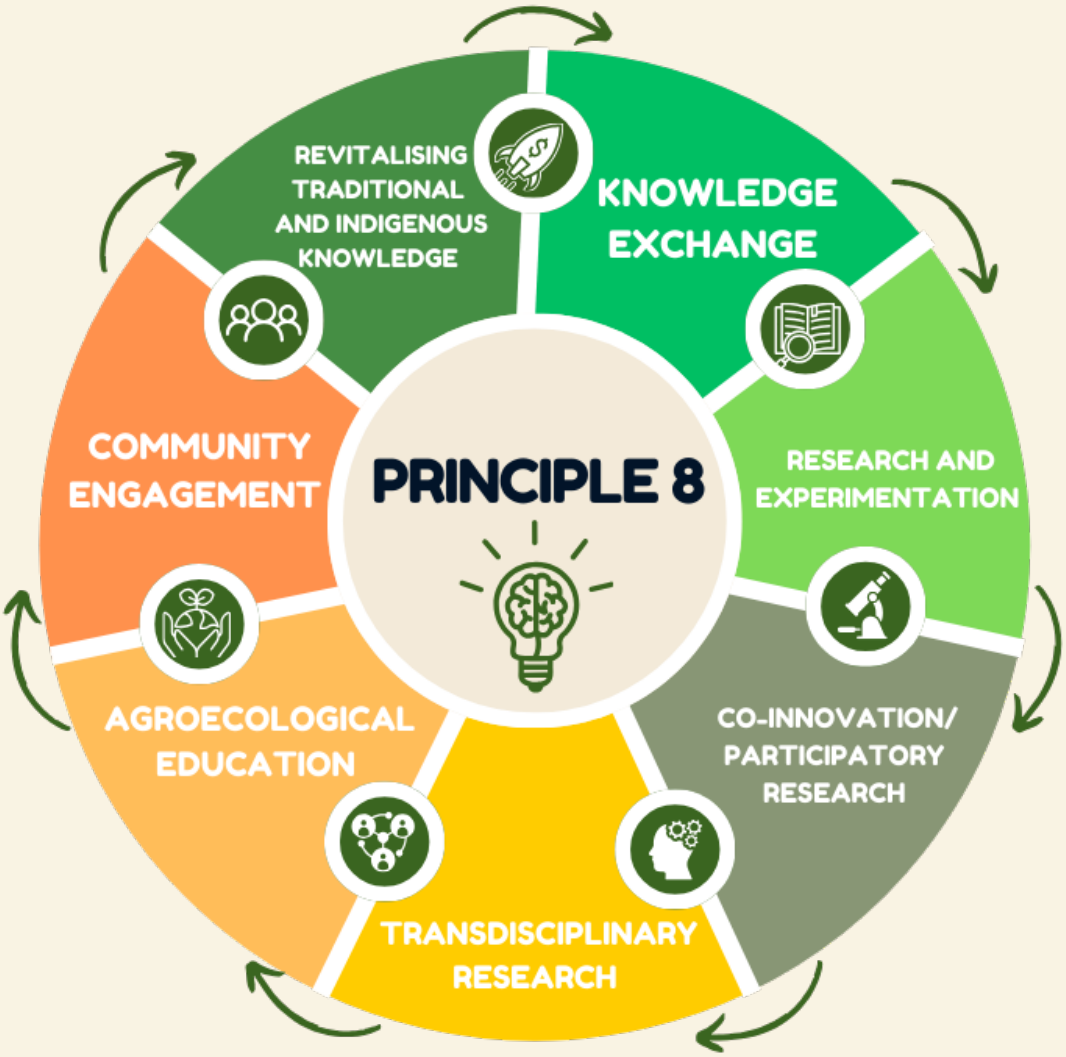

Aloe vera processing.

Production. The farm's production includes medicinal plants, natural cosmetics, teas and honey with various medicinal uses, and food crops grown for self-subsistence and local markets.

Cooperative agro-processing. Agro-processing of farm products is carried out through the cooperative. On average, 30 to 40 women are directly involved in the processing of medicinal plants, engaging in production, transformation and commercialisation.

Principle 8 – Co-creation of knowledge

Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.




Medicinal plant processing course.

Knowledge exchange. Multiple exchanges take place between communities living on the rural settlement and their respective cooperatives, notably COOPLANTAS and Da Terra Cooperative. Formal group activities, including courses and lectures, are organised through the cooperatives.

Revitalising traditional and indigenous knowledge. The farm actively engages in regular exchanges with indigenous and quilombola communities in the region. Through courses and lectures, these interactions facilitate the sharing of valuable indigenous and traditional knowledge, which can be integrated in farm activities.

Co-innovation/participatory research. Within COOPLANTAS, farmers collaborate on trials to improve the production and processing of medicinal plants, during collective workdays, where they come together to manage and refine production systems. The cooperative also maintains exchanges with universities such as the Universidade Estadual Paulista (UNESP) and Universidade de São Paulo (USP), with ongoing research projects and regular visits to enhance practices.

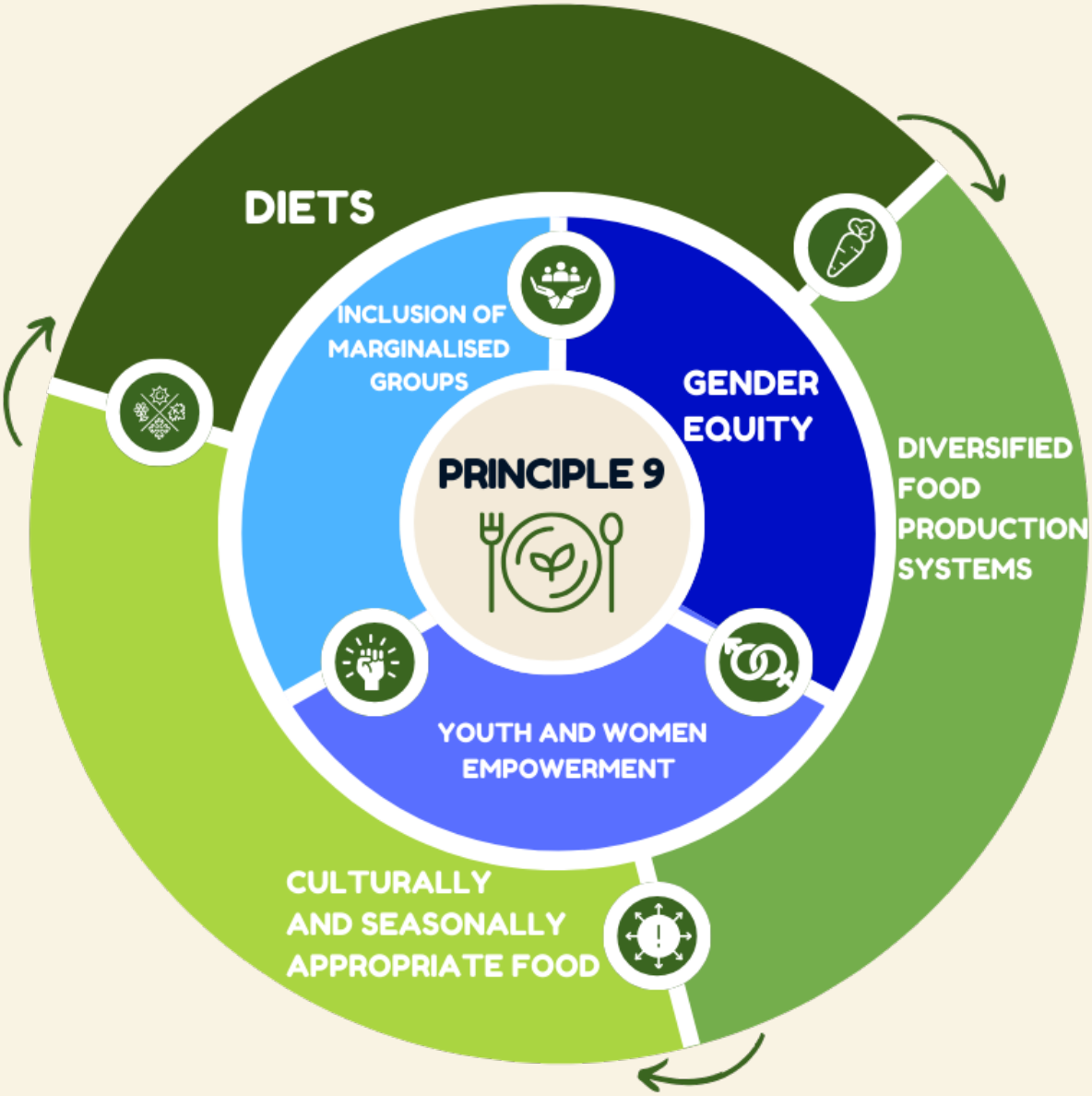

Community harvest of medicinal plants.

Agroecological education. The MST organises farmer gatherings and regional meetings to facilitate the exchange of agroecological knowledge. These events bring together small-scale farmers, landless workers, and rural communities to promote food sovereignty, land rights and food systems transformations. In addition, agroecological courses organised by UNESP and USP are available to farmers.

Community planting for a new agroforestry system.

Principle 9 – Social values & diets

Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.



Social values. COOPLANTAS promotes gender equity by strengthening the financial independence of rural women and empowering them in decision-making roles. On a broader scale, the cooperative enables women to control family income, access self-care products, and improve child care, while also offering a pathway out of domestic violence, which is often rooted in economic vulnerability and gendered power imbalances. More specifically, COOPLANTAS is governed exclusively by women, ensuring that female leadership is at the heart of its operations.

Women involved in community agroforestry work.

Seasonal diversified food production.

Seasonal diversified food production.

Women attending technical meetings at COOPLANTAS.

Diets. The farm contributes to promoting culturally and seasonally appropriate diets through the production of agroecological vegetables. In addition to this, it plays a key role in supporting public health by providing medicinal plants to the public health system. COOPLANTAS is a key supplier to the Unified Health System (SUS), which fills around 5.000 prescriptions annually, helping to improve access to natural remedies and promote better health in Brazil.

Principle 10 – Fairness

Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.

Social vulnerability. The MST, to which the farm belongs, plays a key role in addressing inequalities faced by rural farmers. Through this social movement, Nazaré gained access to agroecological training and land ownership, which enabled her to establish the farm.

Nazaré on her farm.

Market fair sales.

Farmers' markets. There is no formal "Community Supported Agriculture" (CSA) system in place and the farm would benefit from strengthened distribution channels, such as participation in well-established farmers' markets in urban areas. Currently, sales outside of public procurement are primarily made to local customers and residents of nearby urban areas.

Trade. The farm's production is certified through three systems, each with different levels of participation: the Brazilian Biodynamic Association (ABD), the Biodynamic Institute (IBD), and the Social Control Body (OCS). However, most products are sold at conventional market prices with only a small portion, mostly the food production, sold at their certified value. While this makes their products more affordable to customers, this is also a barrier to financial stability for the family. Although federal resources are available to support small-scale farms, access is often restricted because banks do not provide the same financial assistance to agroecological farms as they do for industrial agriculture.

Processed products – COOPLANTAS – Tea.

Principle 11 – Connectivity

Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies.

Food delivery for the Food Acquisition Programme (PAA).


Food delivery for the Food Acquisition Programme (PAA).

Public procurement. The farm is a member of three cooperatives in the settlement—COOPLANTAS, Da Terra, and Agrovida—each participating in distinct public procurement programmes:

- SUS: Starting from 2014, COOPLANTAS has been supplying medicinal plants to Brazil's public health system. Today, a large portion of the production is provided to SUS, which offers free medicines to the population, including herbal remedies.
- Food Acquisition Programme (PAA) and National School Feeding Programme (PNAE): Both programmes aim to combat food insecurity, strengthen family farming and reduce rural poverty by promoting and distributing locally produced food. The programmes provide free food to individuals who lack access to adequate and nutritious meals, including those served by the social assistance network and public primary and secondary school students.

Seasonal and regional demand. The farm actively educates students about seasonality through school visits and indirectly through the school meals programme, helping to cultivate a deeper appreciation for seasonality in future generations.


Products for the solidarity kitchen in São Paulo.

Community restaurants and soup kitchens. The farm, through its affiliation with the MST, is contributing to a solidarity kitchen project in São Paulo. The "Cozinhas solidárias" project was initiated during the COVID-19 pandemic to reduce social vulnerability in urban peripheries. Today, 47 solidarity kitchens are run nationwide through that programme with the support of local volunteers and donations.

Principle 12- Land and natural resource governance

Strengthen institutional arrangements to improve, including the recognition and support of family farmers, smallholders and peasant food producers as sustainable managers of natural and genetic resources.


Event at the COOPLANTAS headquarters.

Food sovereignty & land tenure. The MST actively promotes food sovereignty through its advocacy for land reform, the adoption of agroecological practices and the establishment of solidarity-based food networks. By reclaiming land for landless farmers, the MST ensures access to resources that enables local food production. The public procurement programmes in which the farm participates are also crucial mechanisms for supporting food sovereignty, though they can be undermined in unfavourable political contexts.

Enabling policy environments. With over 1.5 million landless members organised in 24 out of Brazil's 26 states, the MST impacts policies at the regional and national level, advocating for the democratisation of land ownership.

Smallholder rights. Nazaré's daughter, on top of supporting some of the farm activities, is a lawyer actively advocating for the rights of family farmers through the MST.

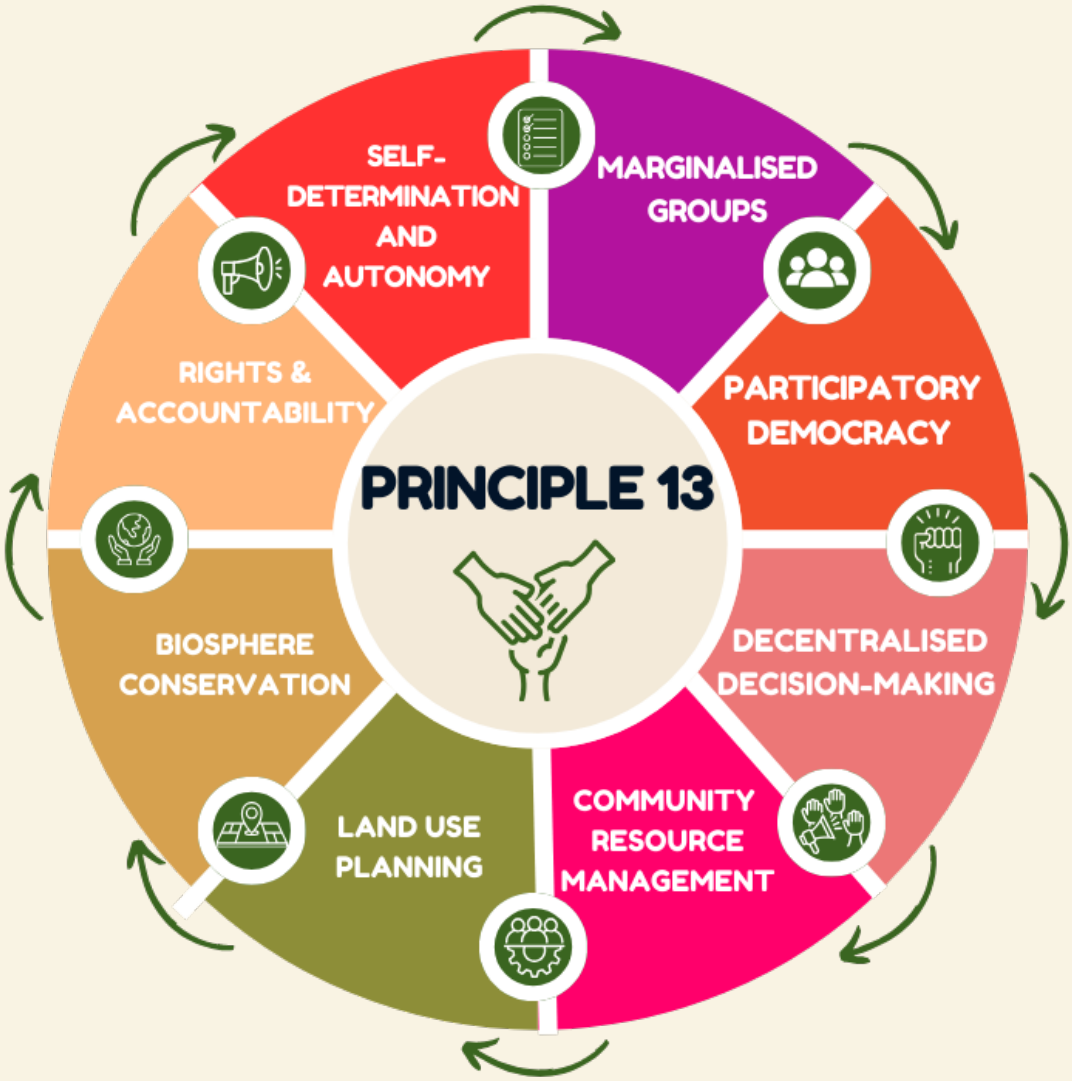

Product promotion at the Brazilian Agroecology Congress.


Community work at the COOPLANTAS nursery.

Seed governance. COOPLANTAS provides seeds and seedlings from its internal nursery, while also allowing members the autonomy to use their own seeds. Seed exchanges are organised through events hosted by both COOPLANTAS and the MST, fostering the dissemination of ancestral knowledge and encouraging members to become stewards of their own seeds.

Principle 13 – Participation

Encourage social organisation and greater participation in decision-making by food producers and consumers to support decentralised governance and local adaptive management of agricultural and food systems.



Members of the COOPLANTAS board.

Decentralised decision-making. COOPLANTAS operates with a decentralised governance model, where decisions are made through active participation in extraordinary, ordinary, and general assemblies involving all cooperatives. The board is elected every two years and includes a president, vice president, treasurer, vice treasurer, secretary, and a council of six members (three regular and three alternate). Each sector, from administration to production, processing, and marketing, has coordinators who manage and make decisions within their area with continuous feedback from all levels of the cooperative. This structure ensures that decisions are made collectively, with representation from all cooperative members, driving community-led agroecological transformation.

Participatory food system governance. Participatory Guarantee Systems (PGS) and Social Control Bodies (OCS) are two participatory approaches to organic quality assurance, fostering collective responsibility and local governance.

- PGS involves the active participation of farmers, consumers, and local communities in the certification process, with compliance overseen by Participatory Organisms for Conformity Assessment (OPAC). Yearly "Conformity Verification Visits" ensure compliance while promoting the exchange of knowledge and collaborative problem-solving among participants.
- OCS relies on community-driven oversight for small farmers selling directly to consumers, eliminating the need for external audits and reinforcing self-regulation.

Both systems empower stakeholders to maintain high standards and adapt practices to local contexts.


Women in management meetings at COOPLANTAS.

This leaflet has been collaboratively produced by the following contributors:

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