



Environmental Management

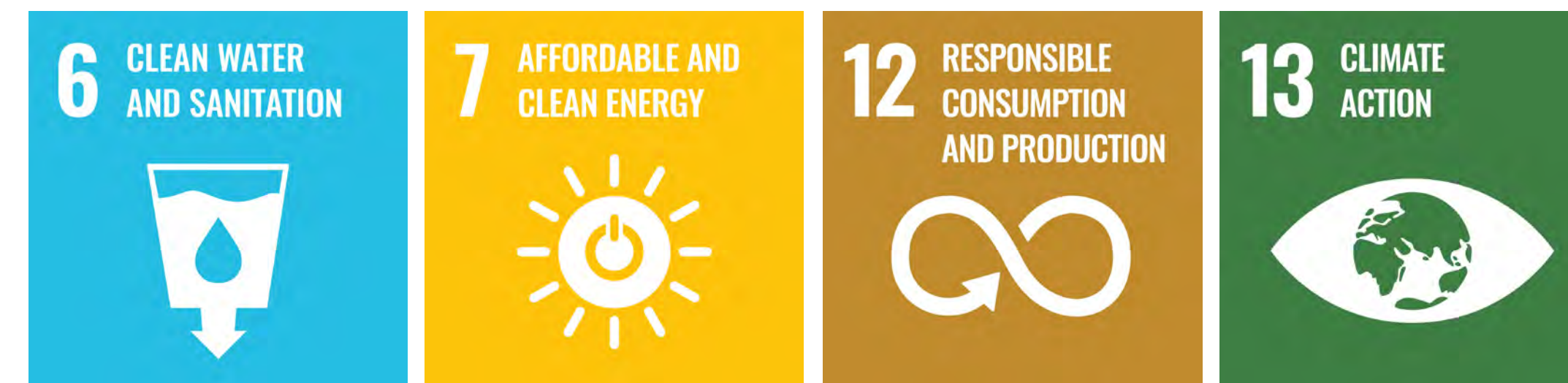


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Our Sustainable Production System

We offer the world natural and quality-certified food products. We preserve the sustainability of the planet through water and soil care and by working to prevent climate change and preserve biodiversity. We promote a circular business model to contribute to caring for ecosystems.

PRIMARY SDGs



SECONDARY SDGs



We are Zero Effluent

We aim at minimising environmental impact and preventing the discharge of liquid effluents into natural water streams. The total amount of effluent generated throughout the industrial processes is managed at our Treatment Plant. Then, this treated water is used for dripping fertigation in 600 hectares of lemon plantations.

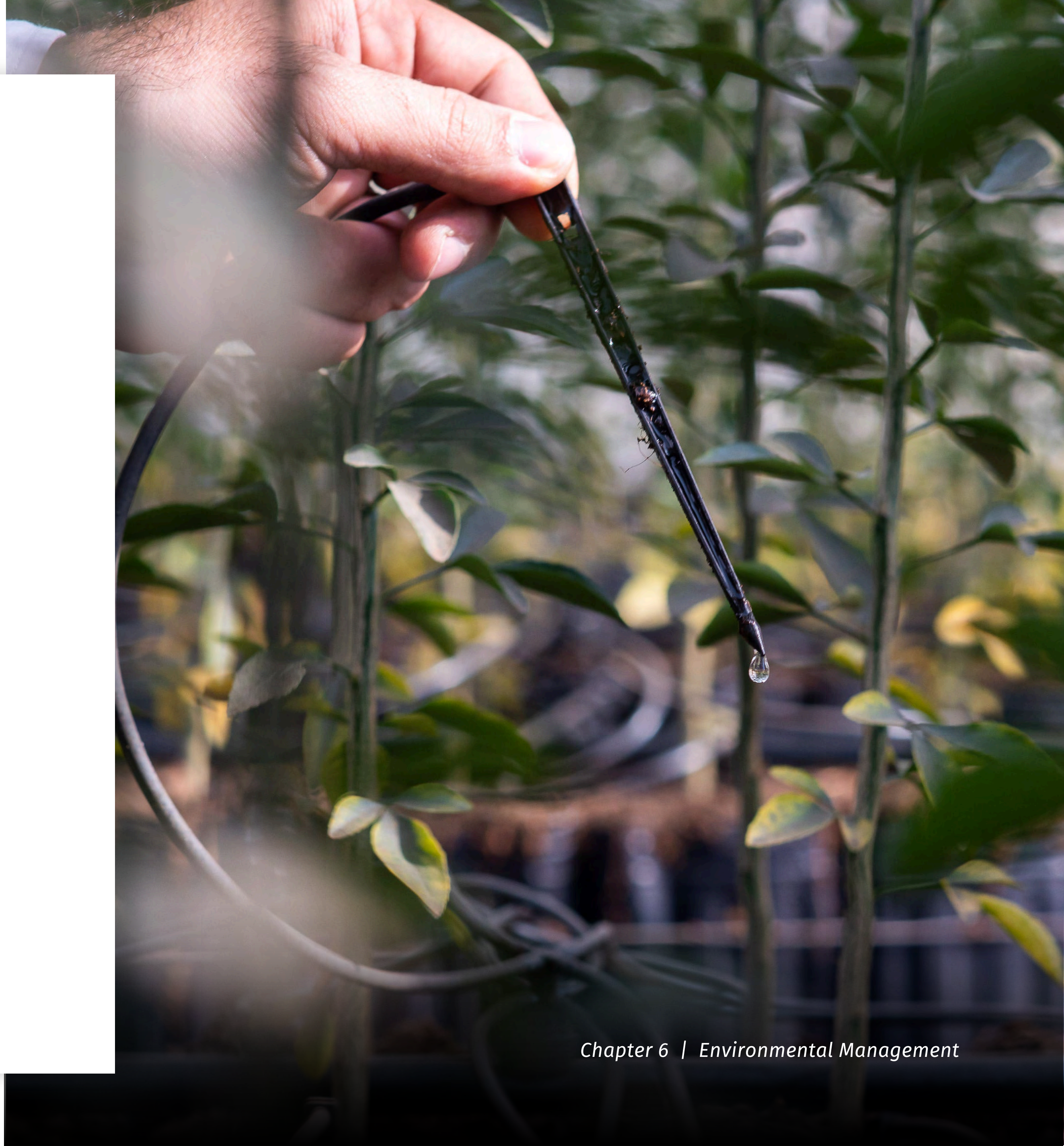


Responsible Use of Water

Water resources are essential for life in our planet and crucial for food production. We implemented an integrated water management as part of our commitment to its efficient and responsible use.

The main practices implemented were:

- » Over 20 operating dams in citrus and agricultural orchards which capture rainwater for production irrigation and prevent soil erosion;
- » 45% of the citrus productive area is under dripping fertigation;
- » Mulching technique in citrus plantations. We reduced the amount of water lost from soils due to evaporation and, at the same time, we made the most of the organic waste generated.



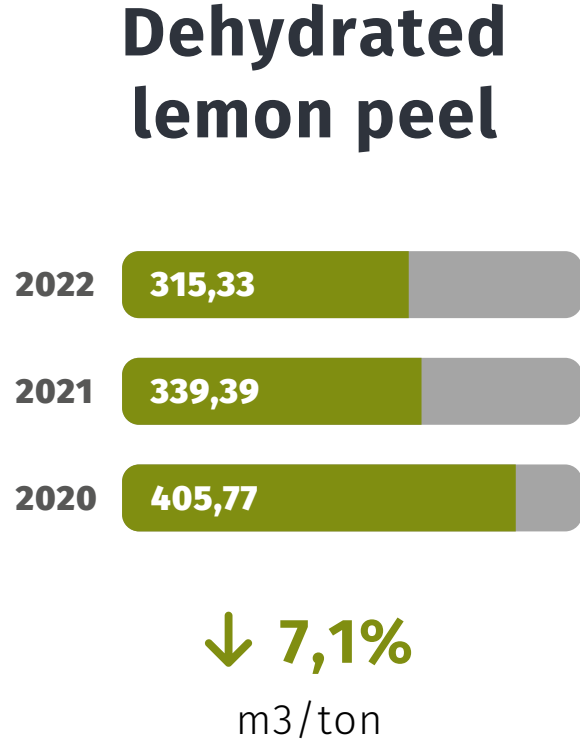
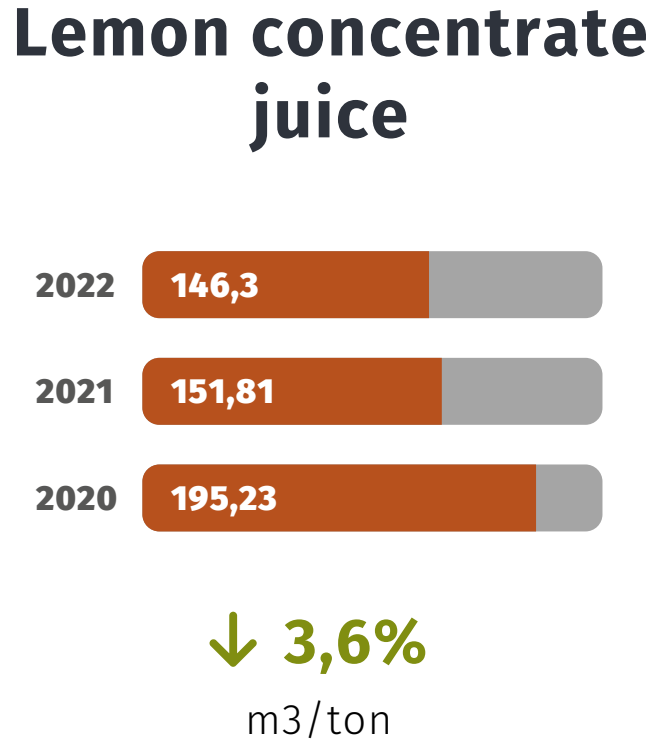
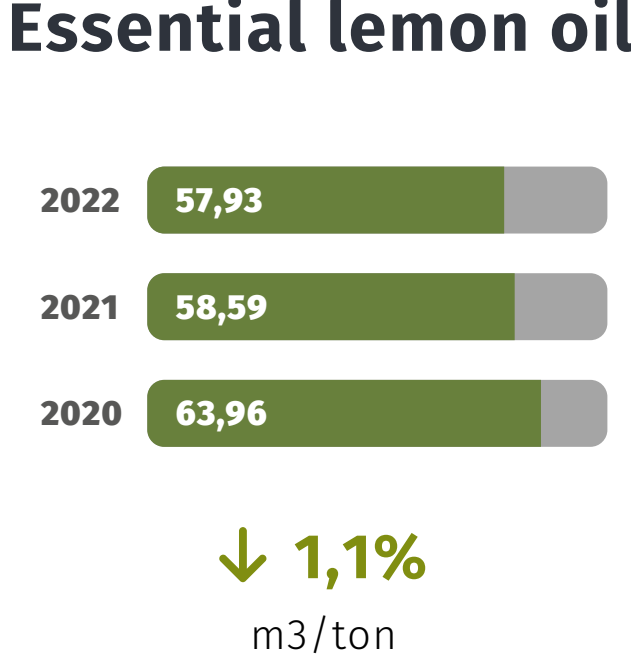
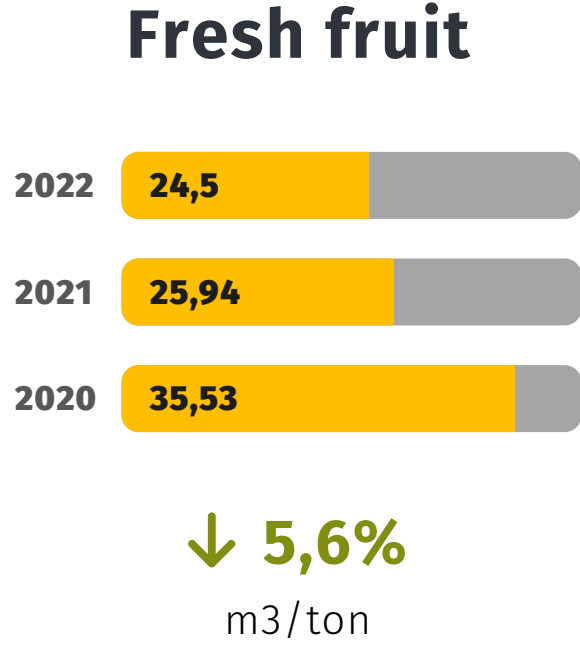
Our Water Footprint

We measure our water consumption throughout Citrusvil’s value chain by using the “Blue Footprint” methodology, which enables us to quantify the water consumption from surface and/or underground sources.



We managed to **reduce** our footprint by **8%**, that is to say, **we saved 645,614 m3**. This was possible thanks to the good practices implemented in our value chain.

Water footprint by product



*Units expressed in m3/ton of product.



The indicators of all the products show the reduction achieved in 2022.

Our Water Management Regarding Global Indicators

The newsletter “Huella Hídrica del Limón en España” [Water Footprint of Lemons in Spain], issued by the Spanish Lemon and Grapefruit Interbranch Organization (AILIMPO) in 2020, mentions various national values.

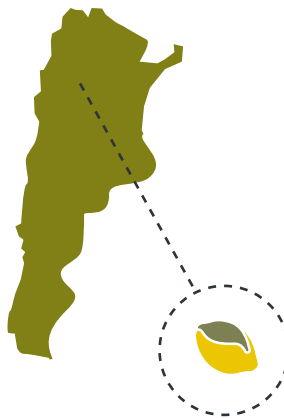
The Argentine value is one of the lowest, in comparison with those from the main lemon producer countries in the world. Citrusvil’s footprint is even lower than the national value. argentino.



Spain
155



South Africa
113



Argentina
83,4
Citrusvil
24,5

Source: Huella Hídrica del Limón en España (ailimpo.com)



Water Consumption by Stage in the Production Process

	Nursery	Orchards		Packing house	Industry
m ³	Irrigation	Irrigation	Spraying	Production process	Production process
2022	27,654.000	5,612,381	170,334	11,645	1,143,986
2021	22,291.000	5,785,959	211,185	19,850	1,573,329
Annual variation	↑ 24%	↓ -3%	↓ -19%	↓ -41%	↓ -27%
	Incorporation of batches of seedlings	45% production area under dripping fertigation – 3.500 hectares	Spraying reduction in citrus plantations	Associated with a reduction in the packing activity in 2022	17% reduction in the specific water consumption. 4.16 m3/ton of processed fruit



We managed to reduce its consumption in all the stages of the production process. The increase in Nursery results from the incorporation of a batch of seedlings which required specific irrigation.

New Good Practices

Primary Production

Artificial Intelligence and Irrigation in Colonia 1 Orchard

Artificial intelligence enables us to analyse live data from the plants and soil by means of meteorological sensors. That is why we conducted research in Colonia 1 orchard to determine the actual need of water of the production land lot. From the analysis of such data, we aim at obtaining real-time forecasts and irrigation recommendations based on plant stress, growth patterns, forecasted weather conditions and water content in soils, and thus using water rationally.

Industry

Being aware of the importance of water in our processes, during the last year, we have incorporated new practices and made investments in order to reduce water consumption in our industries. Some of these practices and investments were:

- » Restoration of water streams in various stages of the process;
- » Optimization of the fruit washing process and pumping systems;
- » Optimization of the peel washing circuit;
- » Continuous staff training on rational use of water.



With all these actions, we managed to reduce water consumption by 17% per ton of processed fruit. We succeeded in getting an indicator of 4.16 m³/ton of processed fruit in 2022.

Actions to Mitigate Climate Change

Responsible Use of Energy

Renewable Energy Plants

As part of our sustainable approach, we promote the use of renewable energies, thus contributing to SDG 7.

Since 2019, we have had a new business unit, transforming biogas into renewable electric energy. We generate and sell renewable electric energy by treating the effluent resulting from lemon industrialization.

This achievement enables us to continue adding value to our effluents. In the context of RenovAr National Program and in accordance with Law No. 27,191, which promotes the generation of electric energy from renewable sources, in 2017, Citrusvil was awarded the project that has transformed biogas into electricity since 2019.



We injected 3 MW into the national network, which is equivalent to the consumption of about 2,500 Argentine households.



Our Renewable Energy Plant has an environmental management system certified by ENRE Resolution 555:2001, which sets forth the criteria and environmental controls for the various agents in the Wholesale Electricity Market (WEM), where we sell electricity.

The system is based on the Environmental Planning tool and provided by the National Electricity Regulatory Entity (ENRE) to monitor compliance with the obligations under control.

As a challenge for next year, we are certifying the new ENRE Resolution 558: 2022 on the environmental management system of Renewable Energy Plants.



In our Renewable Energy Plant, we treat all the liquid effluent generated in our industrial site. In 2022, it represented 1,156,368 m3.

Over the last decade, we have reduced fossil fuel consumption by 20% in our industry.



Learn more about our
Effluent Treatment Plant
Renewable Energy Plant



Energy Consumption

At Grupo Lucci, we aim at being at the forefront of low-carbon production in the world. In this regard, reducing the emissions of CO2 and other harmful gases is crucial when it comes to offering more sustainable products.

Consumption	Annual variation 21-22	2022	2021
Electric energy (MWh)	↓ -1%	31,678	32,010
> Renewable electric energy (wind energy) (MWh)	11%	7,339	6,621
> Non-renewable electric energy (MWh)	↓ -4%	24,339	25,389
Natural gas (m³)	↓ -22%	11,604,437	14,863,563
Diesel oil (L)	↓ -27%	820,748	1,124,455
Liquefied Petroleum Gas (L)	↓ -54%	130,262	283,045



We increased renewable energy consumption by 11% in comparison with 2021.

Electric Energy Consumption

2022



2021



■ Renewable energy
 ■ Non-renewable energy



23% of the electric energy consumed in 2022 came from renewable sources, surpassing the requirements of Law No. 27,191 on the Promotion of the Use of Renewable Energy Sources.

Energy Consumption Related to Industrial Processing

	2022	2021	Variation
Electric energy consumption (KWh/ton)	62.35	65.91	↓ - 5.4%
Natural gas (m ³ /ton)	45.03	46.3	↓ -3%
Diesel oil (l/ton)	3.12	3.55	↓ -12%
Liquefied petroleum gas (l/ton)	0.5	0.86	↓ -42%

*Values expressed in consumption unit per ton of processed fruit in our packing houses and industrial plants.



As a result of the implementation of energy efficiency processes, we managed to reduce electric energy consumption by 5.4% per ton of processed fruit.



As part of our commitment to continuous improvement, in the following year, we aim to continue working on:

- » The installation of a new high-efficiency boiler to improve natural gas consumption in our industrial plants;
- » The implementation of an energy management system in order to increase the frequency and precision of the steam, gas, water and electric energy consumption readings;
- » The increase in the percentage of renewable energy in our energy matrix;
- » The management of the comprehensive plan on correction and control of the power factor in our industrial plants;
- » The reduction in the number of electricity losses and voltage variations;
- » Research and development to produce renewable electric energy throughout the year.





ENGORDAR
INTEGRATED LIVESTOCK FARMING

Solar Panels

We incorporated the use of renewable energies in El Carmen (Catamarca) and El Simbol (Santiago del Estero) livestock establishments, by installing solar panels to pump water in the breeding and rearing establishments.

Such solar panel systems are mainly used to extract water to meet the animals' daily need.

In addition, we incorporated photovoltaic modules for energy supply in general in Don Bruno and Cien Leguas establishments (Salta).



Our Carbon Footprint

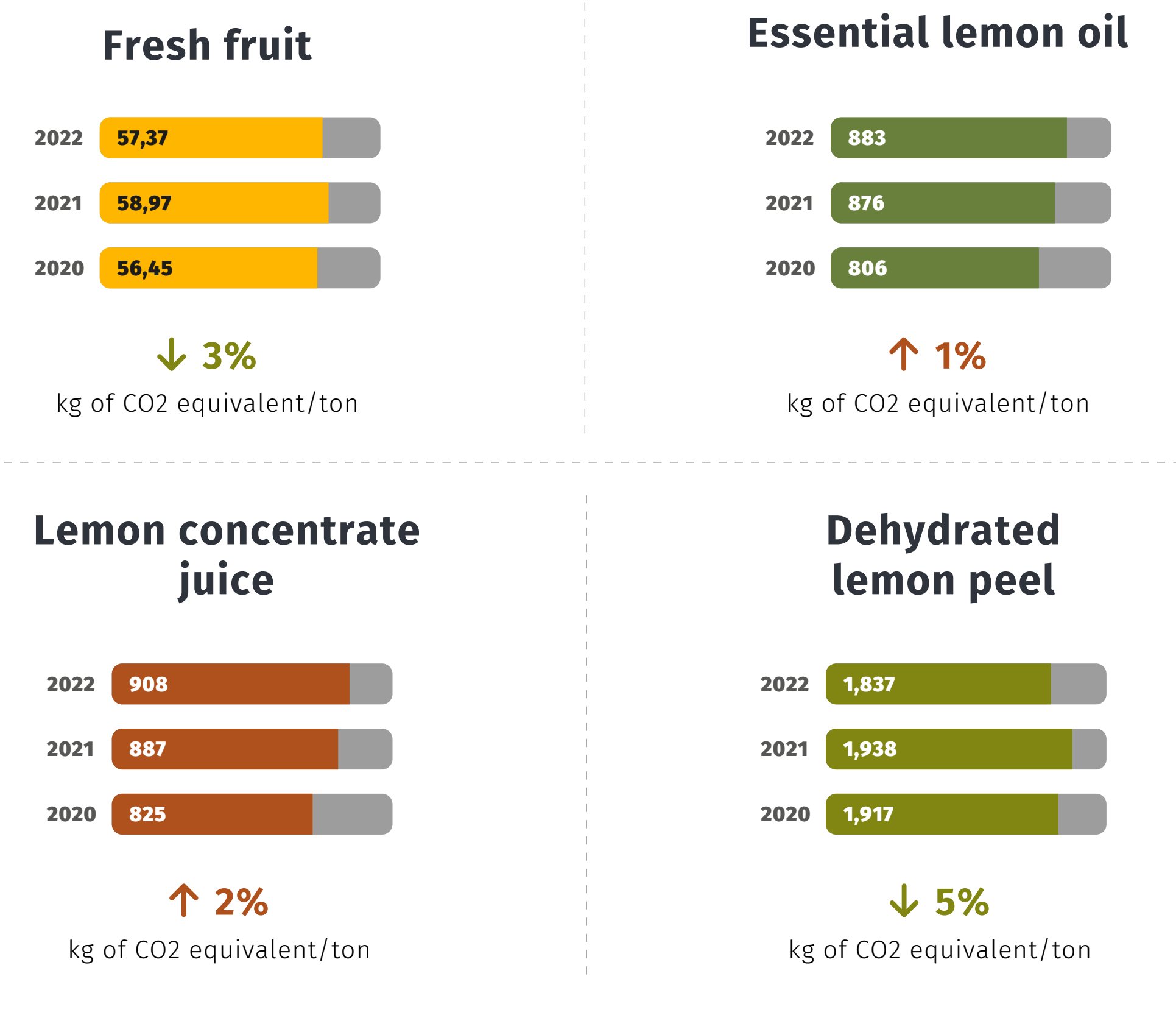
Every year, we measure our carbon footprint throughout Citrusvil’s production chain and in our products. This includes the production of seedlings in our nurseries and the end product obtained in our facilities.



We managed to reduce our carbon footprint by 24% in comparison with the previous year due to the commitment of our teams in each production stage to obtain better results.

As part of the improvements, we identified, in the industrial process, currents of thermal charge that can be used by means of the implementation of heat exchangers. As a result, we managed to streamline processes that have a direct influence in the reduction of natural gas consumption.

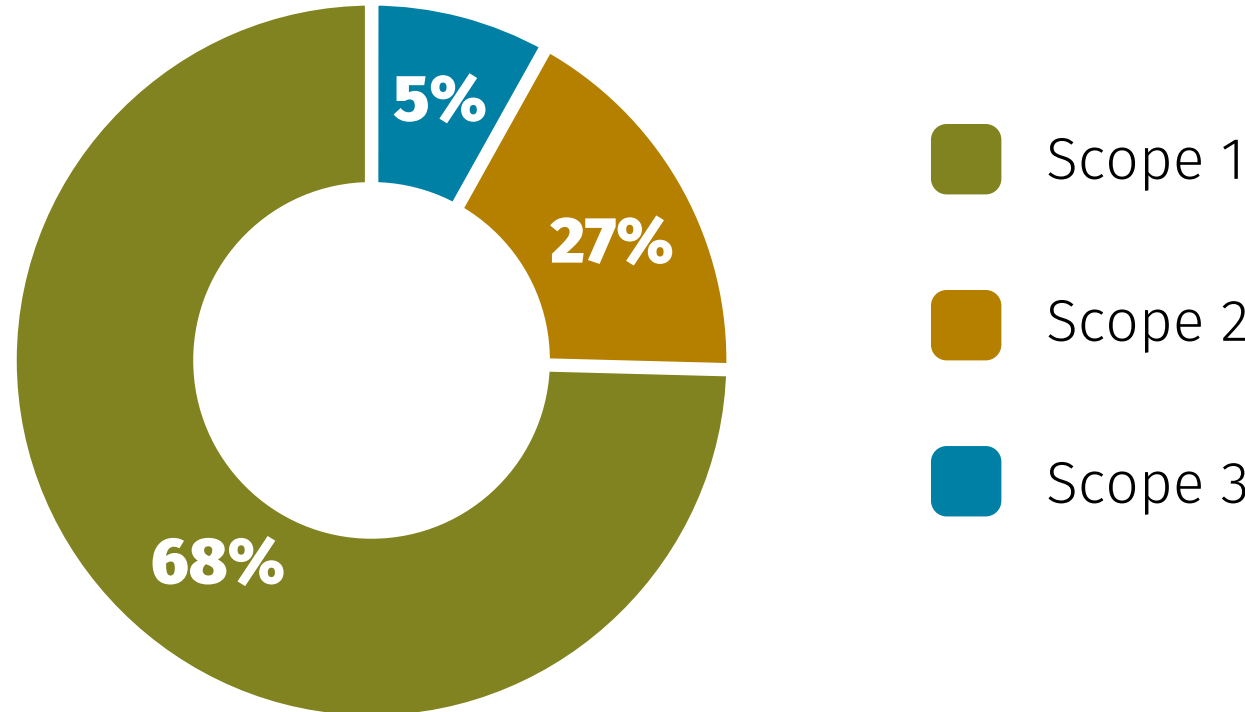
Carbon footprint by Citrusvil’s product



*Units expressed in kg of CO₂ equivalent/ton of product

Distribution of Our List of CO₂ Emissions by Consumption Scope

Our Carbon Footprint Composition



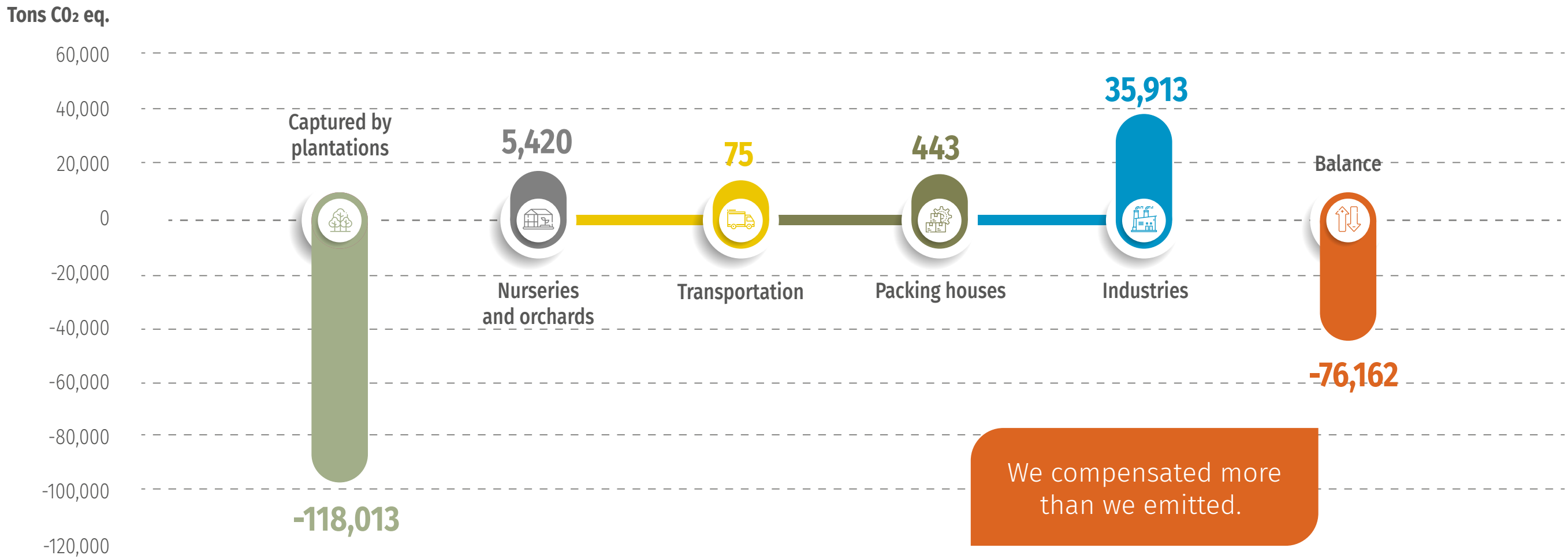
Consumption range composition		2022	2021	Variation
Scope 1	Fuels used in industry and packing: natural gas and liquefied gas. Fertilizer consumption in nurseries and fields.	28,677	39,799	↓ -27.95%
Scope 2	Electric energy consumption in nurseries, fields, packing, industry and effluent treatment.	10,970	11,443	↓ -4.13%
Scope 3	Activities carried out by third parties: fuel for cultural tasks in fields and fruit transportation.	2,204	4,067	↓ -45.81%

Carbon Balance: Positive Impact

Our lemon plantations help absorb greenhouse gases and contribute to stopping climate change. Since 2019, we have calculated an annual capture of greenhouse gas (GHG) emissions of 6,983 net productive hectares in our citrus fields.

Due to the vertical integration of the business, since we produce the necessary raw material to manufacture our product portfolio, we manage to compensate all the GHG emissions generated throughout our operations.

We contribute to reversing climate change



In 2022, our lemon plantations removed 118,000 tons of CO₂ from the atmosphere. This represents almost three times the total emissions from the production sectors.

Carbon Stock Assessment in Native Forests

In order to calculate the carbon stock in our preserved native forests, we conducted a study together with Fundación ProYungas.

Carbon stock in a forest is a sign of its health and state of conservation. The higher the carbon stock, the higher the amount of atmospheric carbon dioxide removed by the forest. This role played by the forest is key in these ecosystems in order to mitigate and stop climate change.

Don Vicente Orchard has 1,411 hectares of preserved native forest and a carbon stock of about 200,000 tons. This represents 138.6 tons of CO₂/hectare, which, in comparison with other Yungas forests, is 60% higher, showing the good state of conservation of our forests.



Carbon Stored



138.6 tons/ha
of Citrusvil's forests



**60%
higher**



86.44 tons/ha
of other Yungas forests



We are carrying out measurements that serve as baseline to assess the current carbon stock and annual fixation in our native forests.

Since the 2021/2022 season, Viluco has participated in Bayer's Pro Carbono Program, which aims at increasing soil carbon sequestration through the implementation of sustainable agricultural practices, such as no-till farming, the use of service crops and crop rotation, among others.



Such actions will allow for greater organic matter input, the reduction of soil removal and the increase in the diversity of species and microorganisms in the soil, thus increasing carbon sequestration. In addition, we will include fertilization and constant monitoring strategies to make the right decisions.

The program will bring five main benefits: socio-environmental analysis to give credibility and transparency on how things are done; digitalized data; precise soil samples and analysis; professional technical consultancy; and access to strategic information through key actors and specialists.



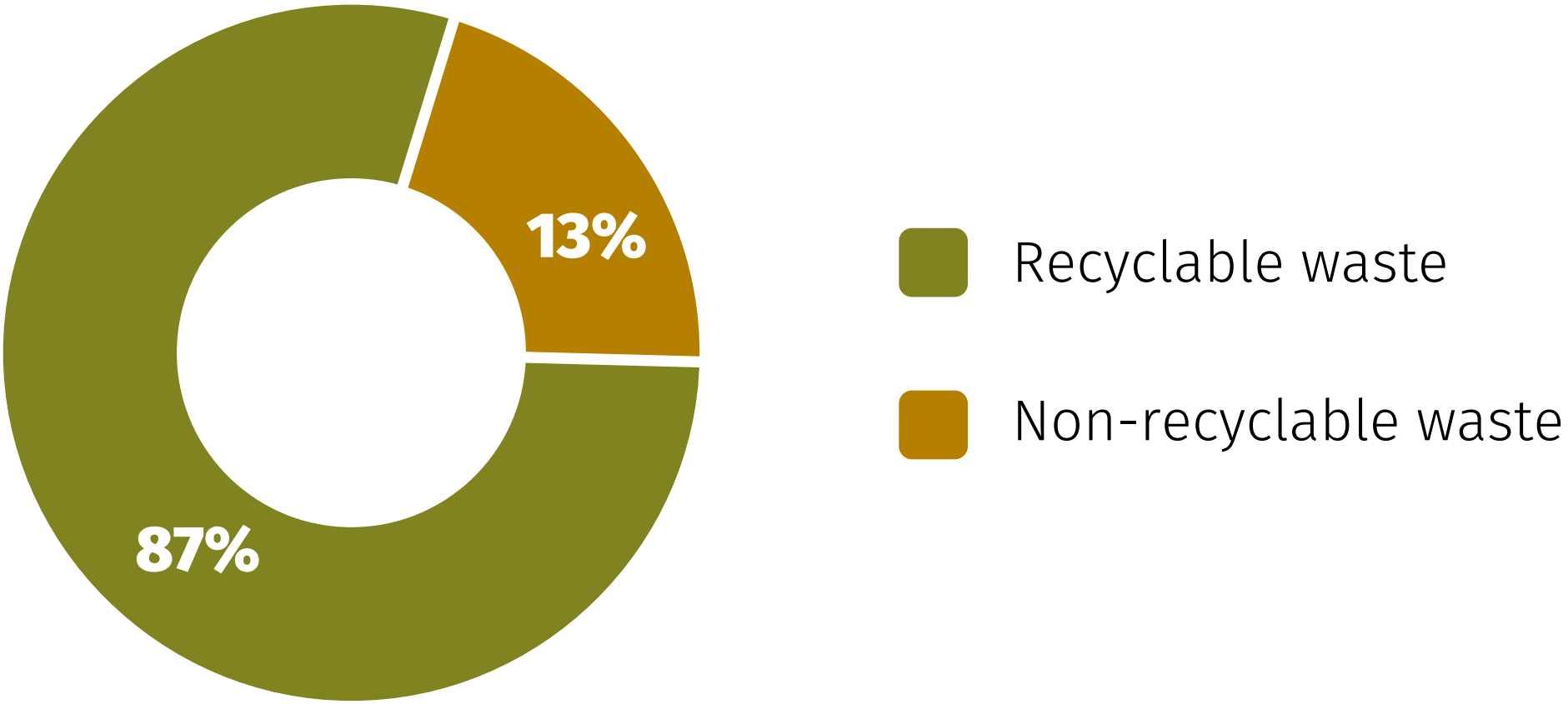
Circular Economy

Our circular economy vision enables us to guarantee the treatment and disposal of all the waste streams generated, through various initiatives focused on continuous improvement.

We are committed to reducing waste generation. Therefore, we work with good treatment practices in order to make waste valuable again.

We promote circular economy practices such as reducing, recycling and recovery.

Waste Generated in 2022



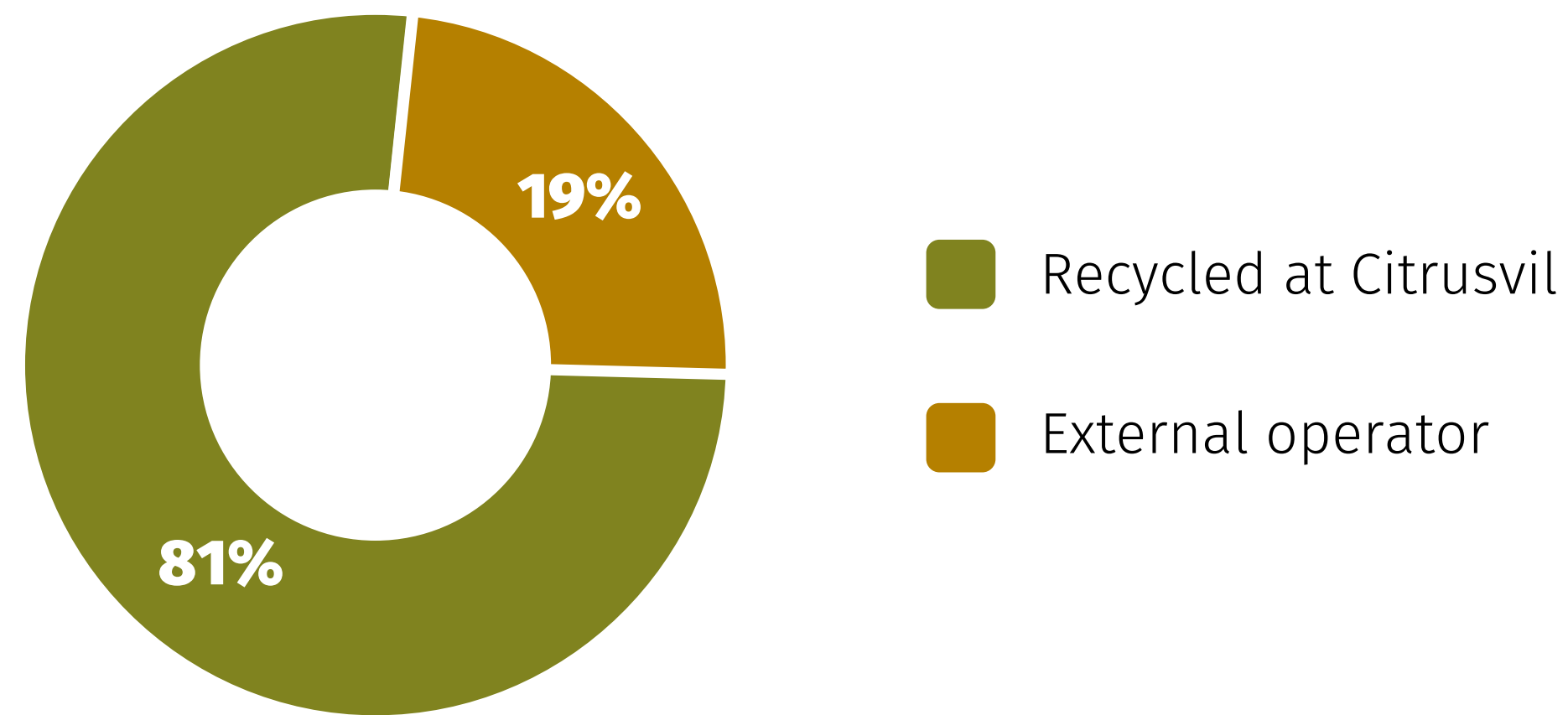
At Grupo Lucci, we encourage recycling. Out of all the waste generated in 2022, 87% was recycled: organic matter, plastic, cardboard and wood.

The remaining 13% —urban solid and hazardous waste —was treated through operators authorized for its final disposal.

Recyclable Waste

We treated 81% of the recyclable waste through our own revaluation processes: Plastic Waste Recycling and Composting Plant. The remaining 19% was adequately classified in our establishments so that it can quickly return to the economic circuit by means of external operators.

Recyclable waste disposal



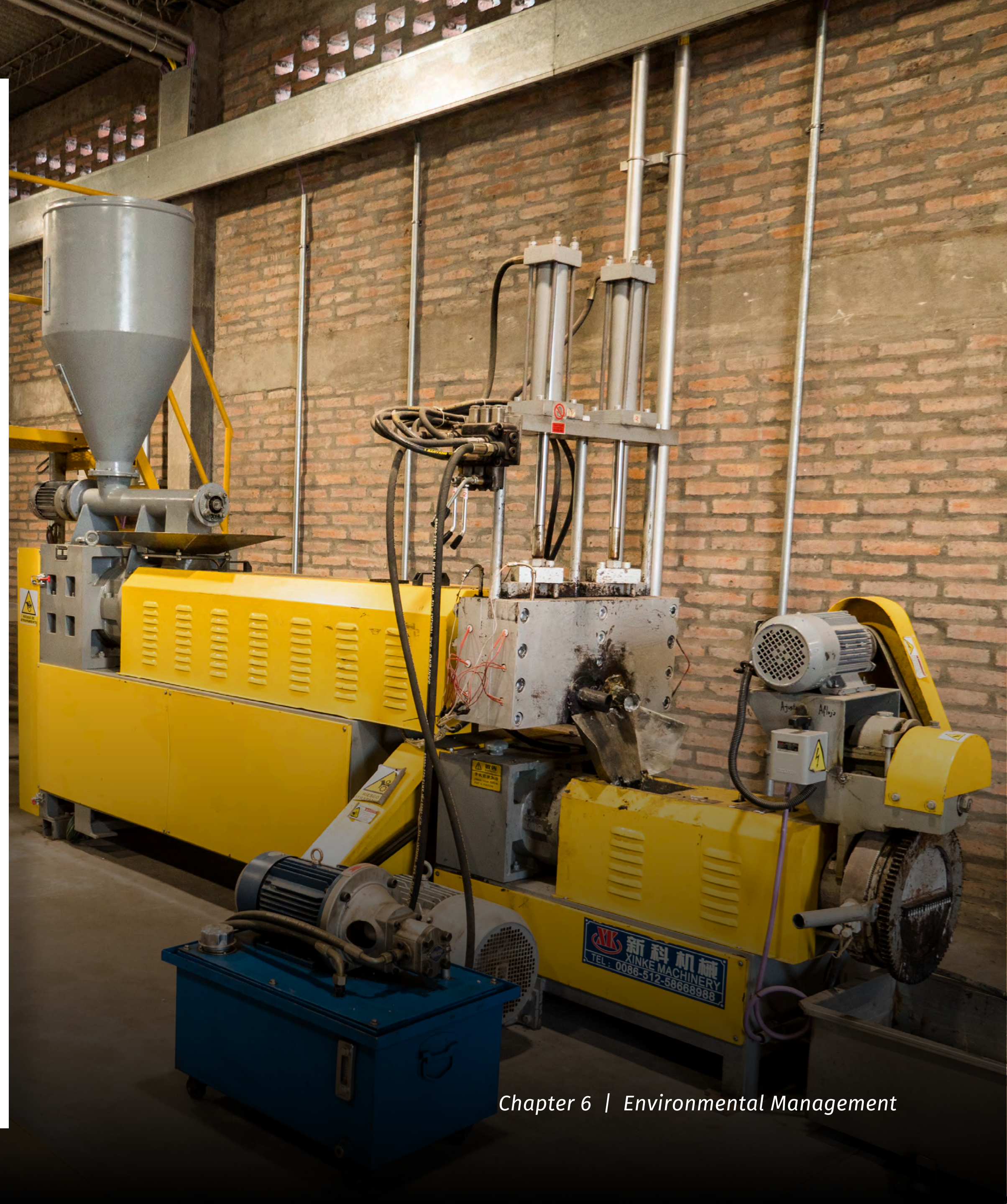
Plastic Waste Recycling Plant We Promote Material Circularity

Our company has a Plastic Waste Recycling Plant, which enables us to consolidate our sustainable business model, positioning us, at a regional level, at the forefront when it comes to returning this kind of waste to the economic circuit.

Recycled plastic (tons)



In 2022, we managed to reduce waste generation (cross bars in bins, containers used in the harvest), raw material used at the recycling plant.



Composting: Organic Waste Management

The solid organic waste generated throughout the production process (leaves, discarded fruit and pulp) is treated at our composting site through an aerobic process and under controlled conditions in terms of temperature and humidity in order to get **compost, whose nutrients are used by lemon plants after we incorporate them into our orchards' soils.**

Compost (tons)



 *The reduction in the amount of compost generated, made up of leaves, branches, pulp, resulted from the reduction in the operation time of the industrial process.*



Recyclable Waste Indicators

Recyclable cardboard per ton of processed fruit



Recyclable wood per ton of processed fruit



In 2022, there was a reduction in the generation of cardboard and wood waste per ton of processed fruit by 20% and 41%, respectively.

Recyclable plastic per ton of processed fruit



In 2022, we increased plastic waste generation (165%) due to the increase in the final disposal of bins, the container used in lemon harvesting, since they reached the end of their useful life.

Non-Recyclable Waste

Through planning and training courses on proper waste classification, we managed to reduce the generation of non-recyclable waste by 6%.

Urban Solid Waste (Tons)



We generated 16 tons less urban solid waste, which represents a reduction of 7.5%. This waste is sent to operators that are authorized by the provincial government.



Hazardous Waste

We manage all the hazardous waste generated in accordance with the legal requirements in terms of storage, withdrawal from each stream and final disposal.

Composition		Disposed of tons	
		2022	2021
Y1	Clinical waste resulting from medical assistance	0.45	0.15
Y4	Containers of phytosanitary products	0.28	0
Y8	Used mineral oils	4.88	2.14
Y12	Containers that have been contaminated with paints and inks	0.62	0.21
Y48	Materials and/or elements that have been contaminated by contact with a hazardous substance	3.53	6.63
RAEE	Electrical and electronic waste	2.26	0

Hazardous waste generated (tons)



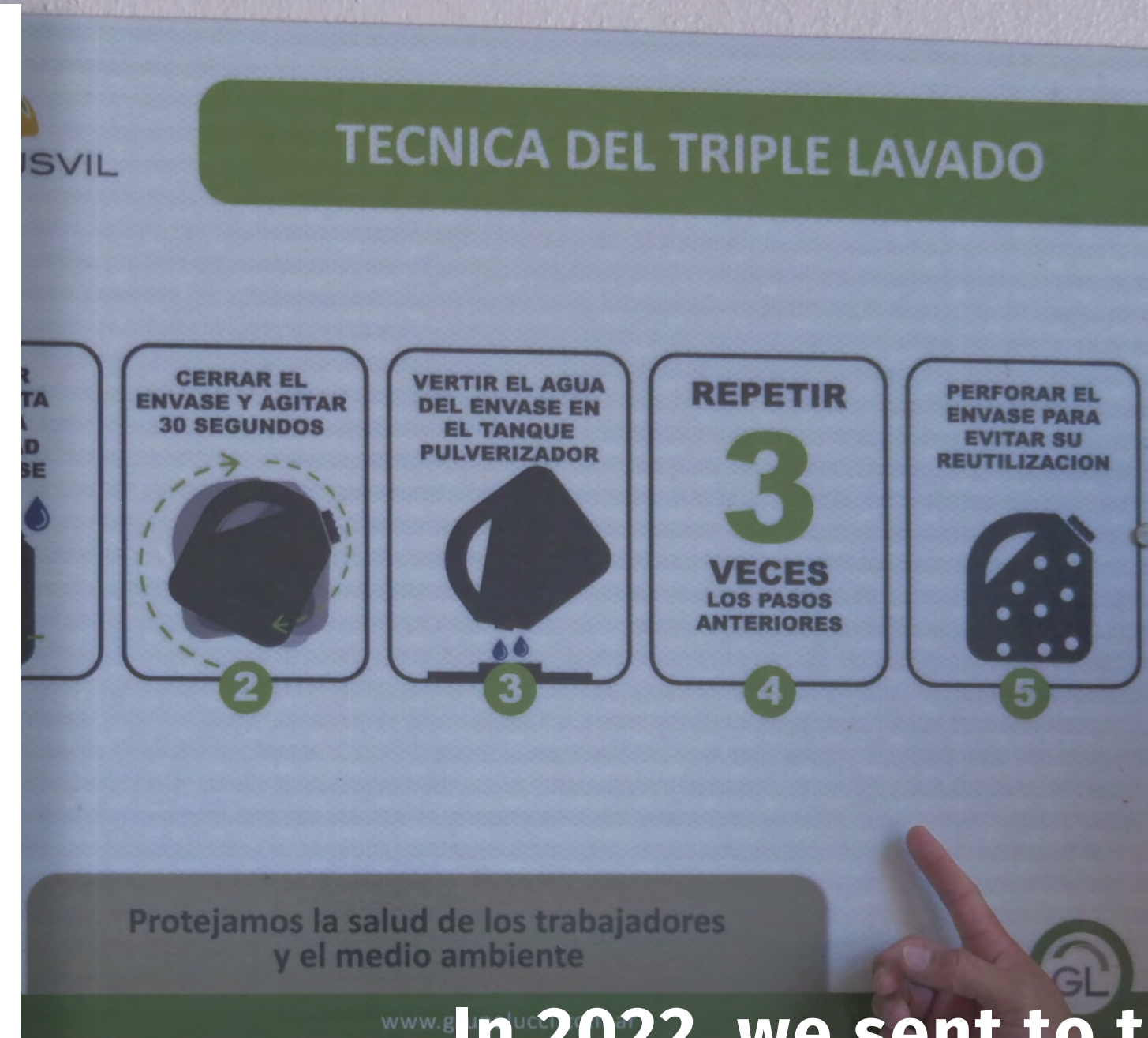
In 2022, we disposed of non-usual streams, such as Y4 and E-Waste, which had been generated in small quantities during the previous year; that is why there is an increase in the values.

Recovery Empty Phytosanitary Containers

Another good practice that we have implemented consists in recovery empty phytosanitary containers from our establishments.

The process starts by training all our staff on the legal requirements and the recovery system we have implemented. When the phytosanitary practices are carried out, the collaborator must perform the procedure of triple washing or pressure washing required by law. Then, we continue with their proper classification and restricted storage and the coordination with the Logistics Department in order to send them to the Temporary Storage Centers.*

*By means of this practice, through the Temporary Storage Centers, Grupo Lucci restores, recycles, reduces and reuses the empty containers in accordance with Argentine Law No. 27,279, which sets forth the minimum environmental protection guidelines to manage empty phytosanitary containers.



In 2022, we sent to the Temporary Storage Centers:

Material	Units
Plastic containers	26,248
Plastic and aluminium bags	15,826
Cardboard boxes	10,212

Biodiversity Conservation

Our properties are located in an ecotone region between the Yungas ecoregion and the production areas near flatlands. These territories make up a landscape where farming hectares coexist with remnant forests and big areas of native forests, located in high slopes, which correspond to the floor of the Yungas rainforest and forest.

Protected Productive Landscape:

Focused on sustainability, we aim at integrating different production activities with the preservation of natural goods (biodiversity, soil and water) and services (water and climate regulation, carbon, pollination).

7,771

gross productive hectares

5,744

hectares of preserved native forest

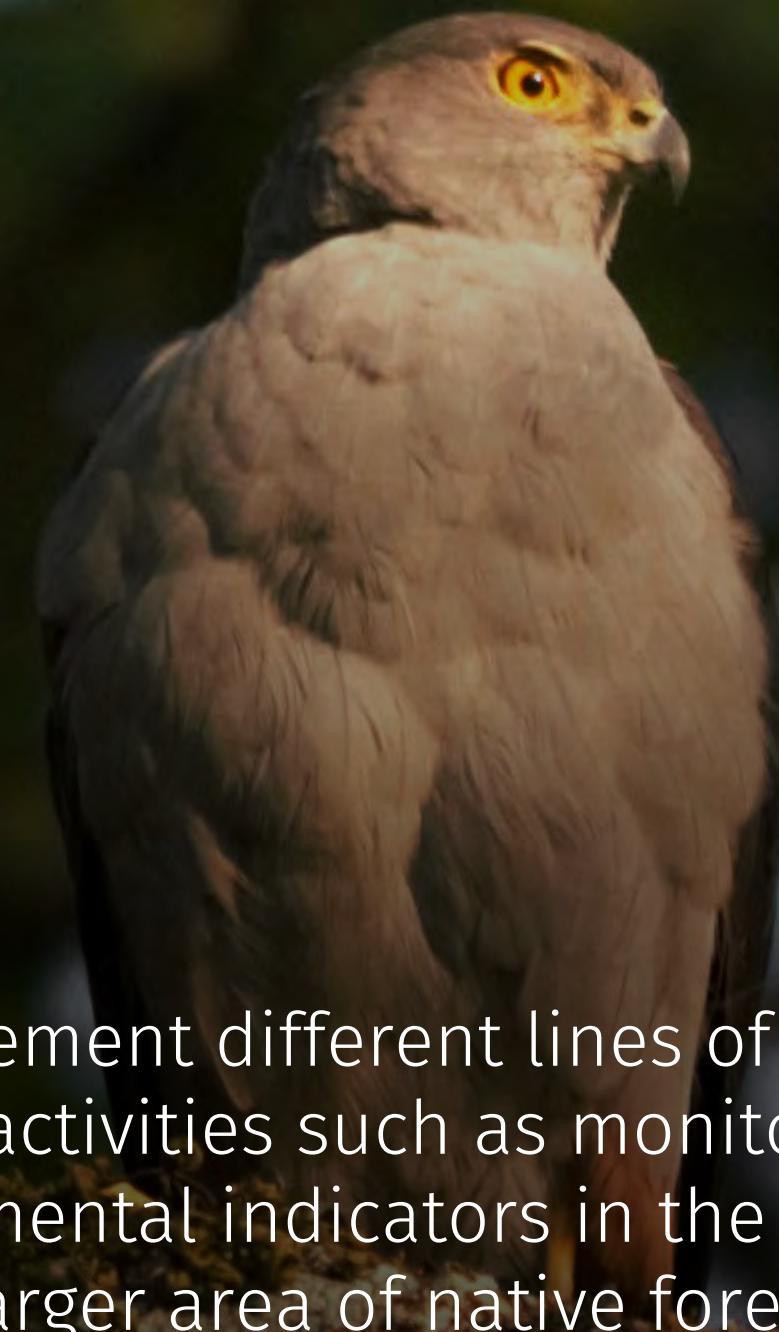
0.75

hectares of native forest per productive hectare



Biodiversity Conservation Booklet, **Fundación ProYungas**

We implement different lines of work that include activities such as monitoring environmental indicators in the orchards that have a larger area of native forest and greater environmental value.



Don Vicente Private Natural Reserve Don Vicente

In 2017, we formalised the creation of Don Vicente Private Natural Reserve and became members of the Argentine Network of Private Natural Reserves. **This reserve has almost 1,500 hectares of Yungas native forests.** Its characteristics and strategic location make it a natural area of great relevance in the region. It is a forest classified as Category 1 in accordance with the Territorial Ordinance on Native Forests (OTBN) of the province of Tucumán.

Don Vicente Orchard is located in the Department of Burruyacú, in a mixed area named ecotone, a region of transition between two big ecoregions: Yungas and the Chaco region. This property is characterised by its strong environmental contrasts since it includes Yungas humid forests in the northwestern area and production environments in the southeastern area, and it extends over 3,515 hectares.



We carried out an amphibian survey in the orchard's dam in order to assess what species live there, study environmental problems, their trophic relevance and environmental sensitivity. The results showed there were non-threatened amphibian species based on their state of conservation in Argentina.

Environmental Monitoring at San Rafael Orchard

San Rafael Orchard is located in the locality of La Reducción, department of Lules, Province of Tucumán. About 20% of the property consists of wildlife areas, such as continuous forest and riparian corridors, while the remaining 80% is comprised of lemon production areas.

Learning about the animal species that live in the protected productive landscapes is important because of their role in various ecological processes and in the provision of ecosystem services. Mammal species diversity and composition are signs of the quality of the environment.

As part of our constant search for balance between the production activity and biodiversity conservation, during this year, we have started to study the orchard's fauna (mammals and birds) in order to implement the planning established in our Protected Productive Landscape Program (PPP) in other orchards.

Bird species are excellent biological indicators of disturbances, such as habitat fragmentation or changes in the forest cover, since they contribute to important ecological processes, such as seed dispersion and pollination.



We registered 79 bird species belonging to 31 families. We identified species that need environments in good state of conservation in order to stay. This is a key indicator to keep these natural areas in relation to and intermingled with production or certain areas. Most of the bird species detected feed on insects which might have an important role in the regulation of the populations of these species.



Regarding the big and medium-sized mammals that live in the area, they are considered a sign of the quality of the environment where they live, since, among other things, they use the environment in terms of landscape and have ecological requirements such as big areas of continuous forest to move and the existence of medium-sized preys to survive. In addition, they fulfill an ecological role that has a direct influence on the quality of the ecosystems where they live, dispersing seeds, modifying the structures of the forests and controlling potential plagues such as rodents.

We registered 8 mammal species, 2 of them are considered endangered at a national level (Ocelot and Tayra).

Generally speaking, the results were similar to those obtained in other orchards. The Tayra in the forest and the Wild fox stand out since they are both capable of tolerating disturbed and fragmented environments and they use anthropic areas to eat. In addition, there is a strong presence of the Pampa or grey fox in the lemon plantations, the most abundant omnivorous species and capable of tolerating anthropic pressure. On one hand, the presence of the Ocelot reflects the quality of the habitat; due to its sensitivity to loss, habitat degradation and hunting, it is an endangered species, and, as such, it must be monitored in time.

Relevant Cases

Bee Hotels, an Initiative Together with Bayer

Ensuring the ecosystem service of pollination is key both for Citrusvil and for its environment. In addition to the benefit of pollination for citrus production, the preserved native forests help keep the pollinators' habitat, enabling them to fulfill their task in our own and in neighbouring crops and environments.

Together with Bayer, we are working on an initiative called **Bee Hotels**. It consists in structures that offer a nesting space to different bee species. This aims at providing efficiency to bee populations, endangered pollination insects, through the implementation of “hotels” close to forests.

With the advice from experts, in 2022, these bee hotels were located at Don Vicente Orchard, in the limit between the forest and the production area.

Bee hotels offer places where different solitary native bee species can build their nests, favouring their stay and reproduction and helping in the process of conservation and preservation of agricultural species by means of pollination.

Pollinators are attracted to nest and lay their eggs in holes for their future grubs, without the need to build a natural nest and, thus, they waste less time and are not exposed to risks. These bee hotels accelerate the cross-pollination process since bees spend less time flying over crops.



Service Crops

Both in citrus production and in extensive agriculture, we have started to use cover or service crops in order to improve the physical, chemical and microbiological features of our soils, the most valuable resource in our production.

At Citrusvil, we have implemented the Service Crops project in three environments: eradicated land lots (with a 10-to-12-month recess until the next fruit plantation), land lots with a young plantation (0-to-3-year-old plants) and land lots with organic production. Some of the results obtained were the reduction in the use of phytosanitary supplies and synthesis fertilizers and the improvement in CO2 sequestration and retention.



In view of the nematodes plague, plant parasites that affect soybean crops, and due to the lack of tools to mitigate or eliminate them, at Viluco we have started to use radish as a service crop. Due to its suppressive effect in the reproduction of these parasites, soil decompaction, coverage and infiltration improvement, we got very positive results, harvesting 1,900 more kilos of corn during the season.





Regenerative Agriculture in El Gran Chaco

Together with **The Nature Conservancy (TNC)** and with the support from **Nestlé**, we are taking part in a joint project during 5 years to implement regenerative agriculture practices. Through this initiative, we will be change agents and promote the restoration and conservation of crucial environments located in the properties and in the landscape.

In order to do so, we are part of a team with a work plan, where we receive advice from and are monitored by experts in agriculture, biodiversity, restoration and carbon from TNC and other related agencies.

With this implementation, we aim at monitoring carbon and biodiversity, stabilising and increasing yields and generating data that enable us to differentiate production at different market niches.



WEED-IT: Selective Application of Agrochemicals in Agriculture

We have implemented this kind of spraying technology which maximises results and reduces environmental impact. WEED-IT scans land lots, locating and accurately attacking even the smallest weed. At Viluco, we have implemented this technology and got the following benefits:

- » Reduction in the use of supplies
- » Lower costs
- » Less environmental impact
- » Better weed control
- » Greater work capacity
- » Reduction in water consumption



Challenges

- » Verify the results of our carbon footprint.
- » Certify the new resolution of the ENRE 558/2022 environmental management system for electric energy generation.
- » Establish partnerships with companies with sustainable production through research in medium and long-term projects.

