

# CATENAMICS

*/kætən'æmiks/*



This is the Catena Family's  
wine and life philosophy.

# THE HISTORY OF THE CATENA INSTITUTE OF WINE

**1852**

The first Malbec vines are planted in Argentina.

**1932**

The second generation, led by Domingo Vicente Catena, master of the blend, discovers the Uco Valley as the best source of Malbec in Mendoza.

**1902**

Italian vintner Nicola Catena plants his first Malbec vines in Mendoza. The Catena Zapata wine tradition is born.

**1984**

Nicolás Catena challenges himself to make Mendoza wines that can stand with the best of the world.

**1968**

Nicolás Catena Zapata and his father Domingo work together to create Saint Felicien Cabernet Sauvignon, becomes Argentina's most collectable red wine.

## 1992

Looking for cooler climates, Nicolás Catena dares to plant a vineyard in Gualtallary, at some 5,000 feet above sea level, an altitude where vines had never been planted before.

## 2002 to 2004

Soil specialist Alejandro Vigil and Dr. Laura Catena begin the work of parcela (vineyard parcel) selection at the Catena Institute. Together with the School of Agriculture in Mendoza, research begins into the effect of altitude and sunlight intensity on Mendoza's high mountain vineyards.

## 1995

Under the leadership of Dr. Laura Catena, a selection of 135 Malbec plants from the Angélica Vineyard, known as the Catena Cuttings, becomes the founding project of the Catena Institute of Wine.

## 2005 onwards.

The Catena family begins to study and plant vineyards in regions beyond Mendoza: Salta, La Rioja and Patagonia.

## 1995 to present.

Meteorological stations are placed in all the Catena vineyards, at different altitudes, to study the effects of altitude on climate.

**2007**

Director of the Catena Institute Fernando Buscema establishes long term partnerships between the CIW and local research institutions such as the National University of Cuyo and CONICET to study Malbec terroir diversity and sustainability.

**2011**

Research collaboration established with UC Davis to study Malbec across hemispheres. The first Malbec vintage from a parcela is made and bottled.

**2015**

Fernando Buscema and Roger Boulton publish the most extensive study to date on the effect of terroir on a grape varietal: 42 parcels of Malbec in Mendoza and California. The results are published in the American Journal of Enology and Viticulture.

**2008**

Catena Zapata's parcela revolution: following an in-depth study of all the parcelas of the Adrianna Vineyard, the first Chardonnay vintage from a parcela is made and bottled.

**2013**

The Catena Institute develops the first Argentine wine sustainability protocol in partnership with Bodegas de Argentina.

## 2017

In collaboration with researchers from UC Davis and the Universidad Nacional de Cuyo (Mendoza), the CIW publishes an exhaustive survey of phylloxera in Argentina – contributing to an increasingly relevant, and still markedly understudied topic in Argentine viticulture.

## 2019

First harvest of the Septentrion Project: a research collaboration of the CIW with the University of Burgundy, with aim at assessing the impact of climate change on Chardonnay and Pinot Noir.

## 2018

The CIW publishes the longest study to date on the aging potential of bottled wine, confirming the regional profiles of Malbec wines are still distinguishable after 5 years of aging.

## 2021

The Catena Institute and CONICET (Argentina's National Research Council) co-publish the most extensive terroir study ever undertaken in *Scientific Reports* (a *Nature* journal). Lead researcher Roy Urvieta studied 23 Malbec parcelas and showed terroir differences over three consecutive vintages.







Aдрианна Vineyard at dusk.



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# INTRODUCTION

A 15th century vinegrower and winemaker was at the mercy of climate. She could not explain the changing seasons, gifts or ravages of nature (without recourse to religion or magic), but she knew when to plant. Instinct and knowledge amassed over generations had taught her what science would, much later, often uphold. Faced with the uncertainty of climate, she did what she could to nurture her vines, and preserve the fertility of the land for future harvests. Much has changed since. What remains? Contemplating a shared experience is the stuff of (some) historians. I can only imagine that the ties I feel to the land – as if I belonged to it, were felt by my ancestors too.

What can history teach us in the drive for a sustainable future? This was the question I asked myself as I embarked on this project. I had much to say about medieval and early modern vine growers, and their struggle against the phenomena of weather would be familiar to any farmer today. But the differences shone far more brightly. There was no *Vitis vinifera* in Argentina in the 15th century, and yet the region has since become a repository for some of the greatest genetic diversity in what were once European varieties. As such, it is a beacon of hope and something to be protected. Today, in Mendoza, as in all wine producing regions, we witness the effects of climate change daily.

So we wrote this with a sense of urgency, such as cannot be ignored. We wrote this with a profound feeling of responsibility, a desire to do better, and with tremendous hope. As part of a family venture, we know that each generation must build on the lessons learned in the past to persist. As members of the larger viticultural community, we want to join in the effort to share these lessons beyond our land, so that we can leave

the world in better conditions than we found it for our children. We believe we are at a tipping point, and that this mindset is gathering momentum more than ever before. When we embarked on this road at Catena Zapata in 1995, we were quite alone in our region, and we had to find our own way.

It began with a goal, hard work, passion, and perhaps above all, a method. As Laura Catena joined, every scientific investigation began with a question. Ours, in brief, was: how can we continue to make wine in Mendoza in 100 or 200 years? Every day, we ask what we can do to further this goal – and I mean this literally! It is the start of our daily meeting.

Our approach demanded work, action, and numbers. We pioneered extreme-elevation viticulture, then created an experimental winery and nursery. We did an in-depth study of biodiversity in our vineyards to preserve flora and fauna, and restored species in the agro-ecosystems. We transitioned all our vineyards to drip irrigation and researched water stress and water shortage to predict climate change scenarios. We conducted microbial soil analysis to understand the impact of rhizobacteria populations on our vines and wine. Where the research was missing, we did it ourselves. To do all of this, we collaborated and continue to join forces with scholars and institutions worldwide. A lot has changed since 1995. Our aims have evolved too. In our effort to make the highest quality wines – wines that can stand alongside the world's best – we have moved beyond preservation to regeneration, nurturing biodiversity as best we can with the tools and knowledge we have today.

What follows is a brief summary of our work in the field to date. We created our own path, an approach meant to meet the needs of our land and people. There are other approaches, from which we avidly continue to learn. We respect all efforts in this direction, and humbly present ours, in the hope that it, too, may inspire others along this path.

*Dr. Adrianna Catena  
Historian and 4th Generation Vintner*





**OUR MISSION:  
TO ELEVATE ARGENTINE  
WINE FOR ANOTHER  
200 YEARS**



**OUR METHOD:  
SCIENCE TO  
PRESERVE NATURE  
AND CULTURE**





# THE CATENA INSTITUTE OF WINE

The Catena Institute of Wine (CIW) was founded in 1995 by Dr. Laura Catena, managing director of Catena Zapata. With the vision to make Argentine wines that stand with the best in the world, the Institute works to advance Argentine wine and its winemaking regions for centuries to come. It participates actively within the global scholarly community, with an important trajectory in research and publication – including the most extensive Malbec study to date, and ground-breaking work on terroir. Today, the focus at the CIW is on sustainability. Ongoing collaborative studies are aimed at regenerative farming practices, water preservation, soil, and vine virus studies. Through its scientific endeavours with partners around the world, the CIW works to promote knowledge, understanding, and collaboration in winemaking and viticulture.



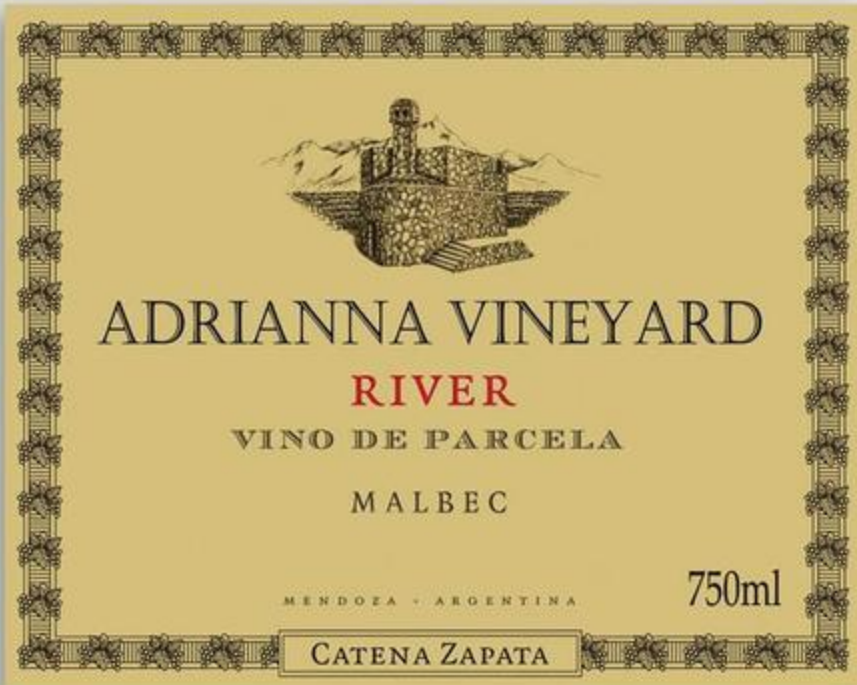
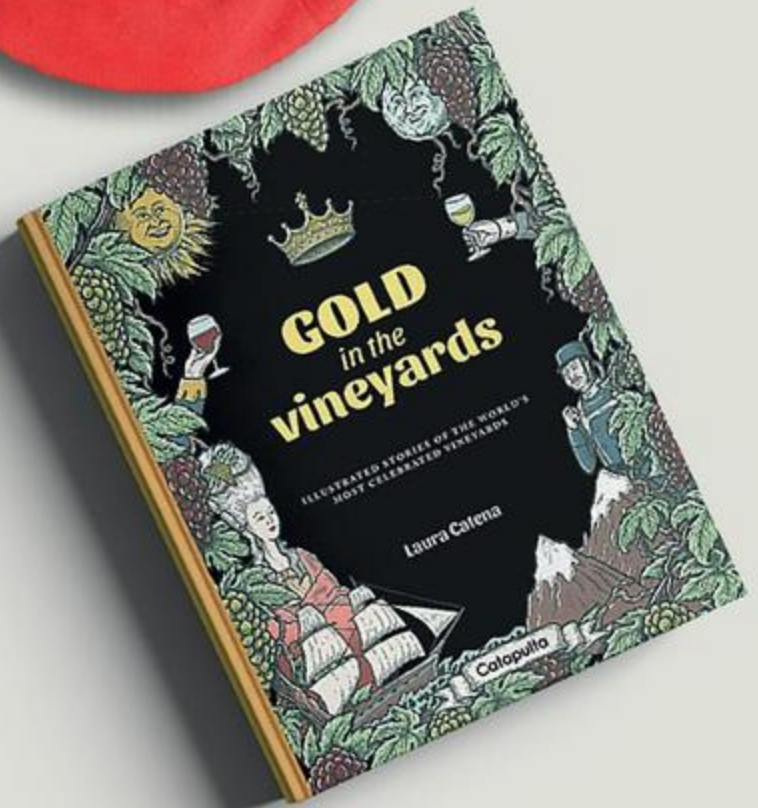
# THE EXPERIMENTAL WINERY

The Experimental Winery – a dedicated space for trials, tests, and innovations – allows us to rehearse and experiment with different vinification systems. Located in our La Pirámide winery in Agrelo, Mendoza, the small winery holds vessels in diverse materials: stainless steel, oak, concrete, and terracota. It is also key to testing how our observations and hypotheses influence the quality of our wine. Our experimentation includes researching old traditions and artisanal practices, including the use of tinajas and foudres. Fermenting in vessels of different sizes and materials, with real replicas, allows us to obtain statistically relevant results. This is crucial for the publication of our results in peer-reviewed journals, but it also gives us confidence in our findings (and often, our intuitions). Located within its walls is our Bodega de Parcelas: here the search is focused on terroir. For each parcel, we seek out the most suitable winemaking practices to highlight the character of the land.

The Experimental Winery is a place for learning and discussion – we receive winemakers and researchers from all over the globe, exchanging practices and techniques that help us develop a deeper understanding of our terroir, improve the quality of our wines, and advance sustainable production.

# OUR FAMILY TRADITION





# OUR **FAMILY** TRADITION

## **CROSSING OCEANS.**

In 1898, Nicola Catena, the founder, arrived in Argentina from Le Marche, Italy. He fulfilled his dream of planting a vineyard in Mendoza in 1902.

## **DOMINGO VICENTE CATENA'S VICTROLA.**

D.V. was a grand entertainer and a lover of music and large family gatherings. He became famous as a master blender with his classic: "Tinto Buenos Aires," and loved Malbec from La Consulta above all other wines.

## **ANGELICA ZAPATA'S TYPEWRITER.**

Angélica, our educator, was headmistress at the local country school in Mendoza, and she believes that education held the key to all individual and societal progress. She inspired generations of knowledge-seekers within the family.

## **YOUNG NICOLÁS CATENA ZAPATA.**

Nicolás grew up working in the vineyard and reading. Inspired by his mother and father, he fused his intellectual passion and ambition with the family tradition, determined to revolutionise Argentine wine.



### **SAINT FELICIEN 1963.**

Nicolás - the pioneer - took the lead of the family winery in 1963 and introduced new quality standards.

Although Nicolás is best known for leading the high-altitude Malbec revolution in Argentina, his first collectible wine was a blend based on Cabernet Sauvignon, Saint Felicien.



### **LAURA CATENA'S ICONIC "BOINA" & BOOK.**

Laura - a physician with a scientific outlook - founded the Catena Institute of Wine in 1995, driving systematic research and a push for knowledge. Under her leadership, every meter, every rock, every insect, and micro-organism of the Adrianna Vineyard have been and continue to be studied.



### **ADRIANNA VINEYARD.**

Adrianna, named after Nicolás' youngest daughter, is known as South America's grand cru vineyard. The Adrianna "vinos de parcela" have been awarded multiple 100-point wines from prestigious international wine critics.





SCIENCE TO PRESERVE  
**NATURE**

PART I



# AN ARGENTINE REVOLUTION

**F**orty years ago Nicolás Catena Zapata placed weather stations all over Mendoza. He was looking for the kind of cooler climate that would allow him to make wines of elegance with natural acidity and the kind of tannins that age gracefully. In the process of scientific discovery, we happened upon the diverse, calcium carbonate-rich soils of Adrianna which, in time, yielded what have been called South America's grand cru wines. Today, planting at high altitude has become a solution to climate change in many parts of the world, and the Catena Institute shares our process and methodology to help others create their own revolution. Although our scientific process was deliberate, many of the findings were happenstance and unexpected. The key was to keep our eyes (and minds) open – open to testing a hypothesis year after year, because vintage variability makes multiple-year trials necessary to reach any conclusion in viticulture. Catenamics is the belief that, through study and (scientifically) controlled trial and error, we will preserve our region's winemaking traditions for the generations to come.

A photograph of a Malbec grapevine in a vineyard. The vine is trained vertically on a wooden post. A white rectangular label with a black border is attached to the post. The label contains the text 'MALBEC 1902' and 'CATENA ZAPATA' in bold, black, sans-serif capital letters. The vine is covered in green leaves and a cluster of dark purple grapes is visible near the base of the label. The background shows other grapevines in a field under a clear blue sky.

**MALBEC 1902**  
**CATENA ZAPATA**

# HISTORIC CLONAL AND MASSAL SELECTIONS

**U**nder the leadership of Dr. Laura Catena, a selection of 135 Malbec plants, known as the Catena Cuttings, became the founding project of the Catena Institute of Wine. Most of these plants were selected from the historic rows in Lot 18 of the Angélica vineyard, planted around 1922 on the banks of the Mendoza River. Individual plants with valuable characteristics – balanced, low yielding, with small, concentrated berries – were isolated and reproduced as a massal and clonal selection in our high-altitude vineyards, ensuring the continuation of our mother population. The cuttings were planted first at La Pirámide vineyard, in

Agrelo, four clones per row, where climate is comparable to Angélica, allowing for the study of its viticultural and enological behaviour. Both the massal selection and individual clones were planted at Nicasia and Adrianna vineyards, in Altamira and Gualtallary, to examine the effect of high-altitude terroir on plant behaviour. There is also a complete replicate of the original selection at the Adrianna vineyard. When it comes to preserving genetic diversity, the onset of climate change has given us a sense of urgency – diverse vineyards are stronger, more resilient, and often remarkably adaptative.

**'In the context of changing environmental conditions, it's very much about preservation: the Catena Cuttings are our great library, a genetic ark and archive of Malbec.'**

ALEJANDRO VIGIL  
HEAD WINEMAKER AT CATENA ZAPATA









# HIGH ALTITUDE VITICULTURE

In the 1990's, Nicolás Catena embarked on an ambitious plan to explore the potential of planting at extremely high altitudes, moving vineyards from lower/warmer regions to higher altitudes. It was a wildly successful gamble, with serendipitous discoveries. Initially motivated by the quest for better quality, Nicolás had also stumbled upon a viable path in the face of climate change.

The initial attraction of higher vineyards was simple: altitude, as is known, can moderate the effects of warm climates. Higher vineyards are also cooler. Temperature decreases approximately 1°C for every 100m increase in elevation. Plant respiration at night is a key physiological process that is highly influenced by temperature. The cool nights that characterize high altitude allow for lower respiration rates, which enhances the concentration of malic acid in the berries. Therefore, wines sourced from

high altitude regions offer higher acid levels. The retention of natural acidity makes for more vibrant wines with sugars and tannins achieving optimal ripeness at the same time. The temperatures are so cool in the higher parts of the Uco Valley that the Brix might only go up by 1 degree over 2-4 weeks, allowing the grapes to ripen gradually and fully.

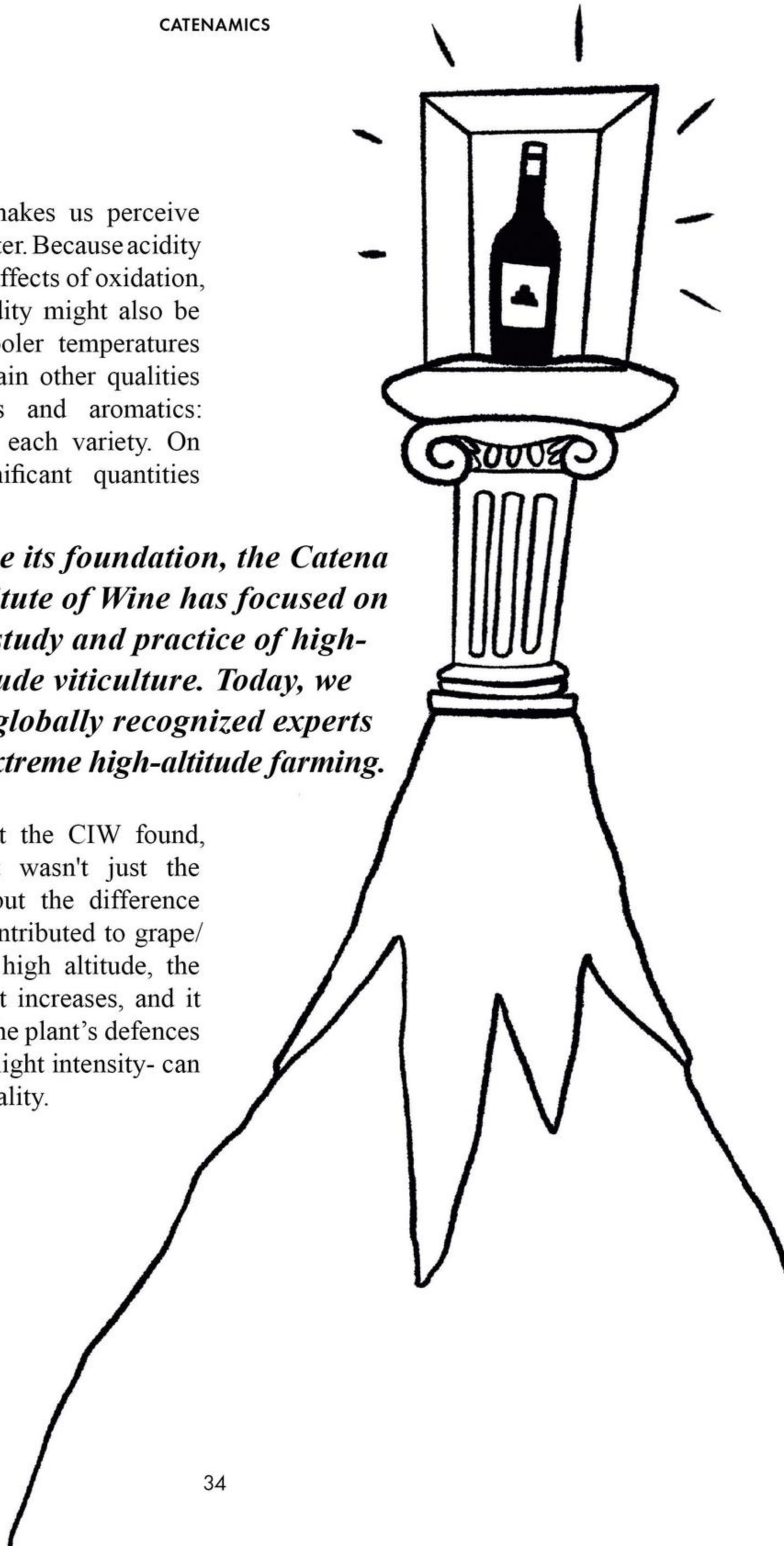
High-altitude Malbec combines high levels of phenolic compounds (among them, tannins), with a velvety smoothness on a sensorial level.

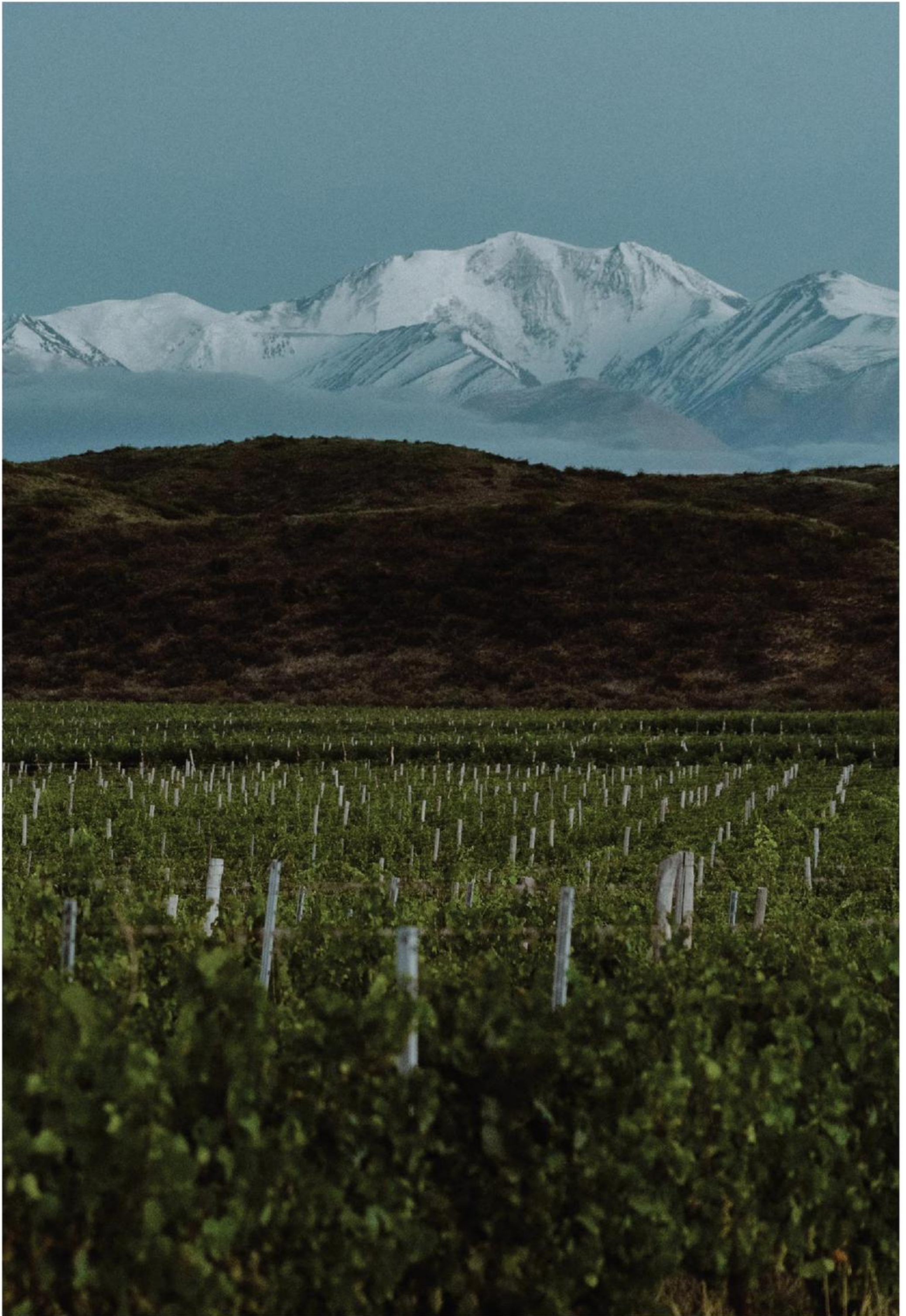
This could be due to the fact that in high elevation vineyards the building blocks of tannins are softer, and/or to the higher proportion of



polysaccharides that makes us perceive these wines as being softer. Because acidity can help to reduce the effects of oxidation, wines with higher acidity might also be aged longer, while cooler temperatures allow berries to maintain other qualities such as anthocyanins and aromatics: compounds typical of each variety. On the other hand, significant quantities of phenolic compounds (the kind produced in high elevation vineyards) have more recently been associated with longer ageing potential. What the CIW found, however, was that it wasn't just the cooler temperatures, but the difference in light quality, that contributed to grape/wine composition. At high altitude, the intensity of UV-B light increases, and it turns out that some of the plant's defences -prompted by this high light intensity- can be positive for wine quality.

*Since its foundation, the Catena Institute of Wine has focused on the study and practice of high-altitude viticulture. Today, we are globally recognized experts in extreme high-altitude farming.*



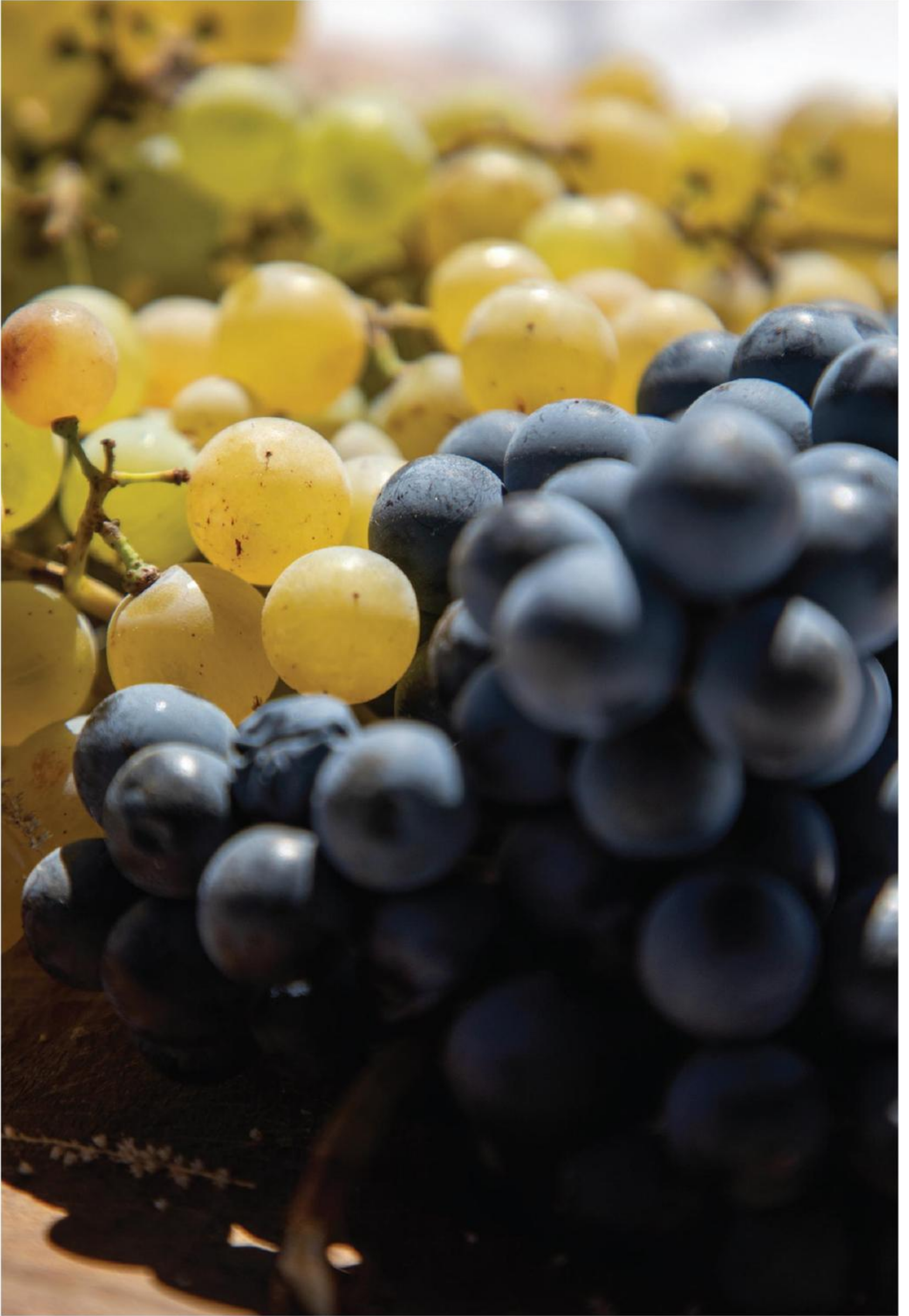


## SUNLIGHT INTENSITY AT EXTREME ALTITUDE

**A**s altitude increases, the atmosphere becomes thinner. This means there is a thinner barrier between the sun and the earth's surface, which causes an increase in sunlight intensity. At high altitudes, ultraviolet-B light (UV-B, one of the most energetic fractions of sunlight) increases. This is because the UV rays must travel a shorter distance through the atmosphere, with the result that more get through. The increase in UV-B as you travel from 500 meters to 1000 is quite modest, but the rise seen at 1,450 meters—the altitude of the Adrianna vineyard at Gualtallary in the Uco Valley—is more dramatic. How the vines respond to this light has implications for grape and wine quality. We've been studying these implications for the past two decades.

Since UV-B light is very strong at high altitude, it can damage living tissue. The vine defends itself against UV-B by

making its surfaces more reflective and increasing the production of defence molecules. Because some of these molecules are desirable in grapes, this increase in response to UV-B exposure is highly relevant to viticulturists. The UV-B results in a greater accumulation of polyphenols and aromatic compounds in the berry, caused by the plant's defence mechanism to protect its seeds against sunlight. A higher content of polyphenols and aromatics translates into a wine with a darker colour, more complex flavours, and longer aging potential. Ultraviolet (UV) light from the sun both affects and is affected by global climate change. Understanding the effects of changes in UV light is therefore significant to both the well-being of our ecosystems and the quality of our wines.





# WATER MANAGEMENT

**I**n Mendoza, water rights are limited and strictly regulated. Properties will come with water rights from a nearby “acequia” waterway and/or from an underground well. So, for example, on a property of 50 hectares, you might only be able to cultivate 10. This is why many estates have areas of native vegetation (adapted to very low water availability), next to the vineyards. In some cases, wells need to be dug down to 100 meters or more. The vine, therefore, has very little water accessible to her unless we facilitate it. This is a marked difference with other winemaking regions. In the context of decreasing glacial waters, the preservation of water is essential to the future of winemaking in Mendoza. This is one of the most urgent questions for our region today and is an important focus of work for the CIW. We are currently pursuing innovative and more effective ways to limit our water consumption. Ongoing research includes a doctoral thesis on buried hoses and aerial water-

needs estimations – a system currently being developed and rehearsed at the CIW, with the potential to save water by reducing evaporation, and controlling weed growth in organic vineyards.

Drip irrigation is essential for water conservation, and it is also good for highlighting terroir. Our research has shown that there are significant differences in flavour between different soils even within the same vineyard. We no longer use flood irrigation – a traditional but wasteful system – in any of our vineyards. This is one of the situations where “tradition” goes against preservation, and where an innovation as simple as drip irrigation can have a large impact. We also capture rainwater and have created “represas”, or small reservoir lakes, in all our family-owned vineyards. Water is stored in these reservoirs to be used during the growing season, when the vines are working hardest.



▶ Century-old vines at Angélica Vineyard.





## **OUR GOALS**

- To examine water consumption by hectare, by litre of wine, and by bottle.
- Implementing measures to reduce water consumption across all processes considered “critical.”

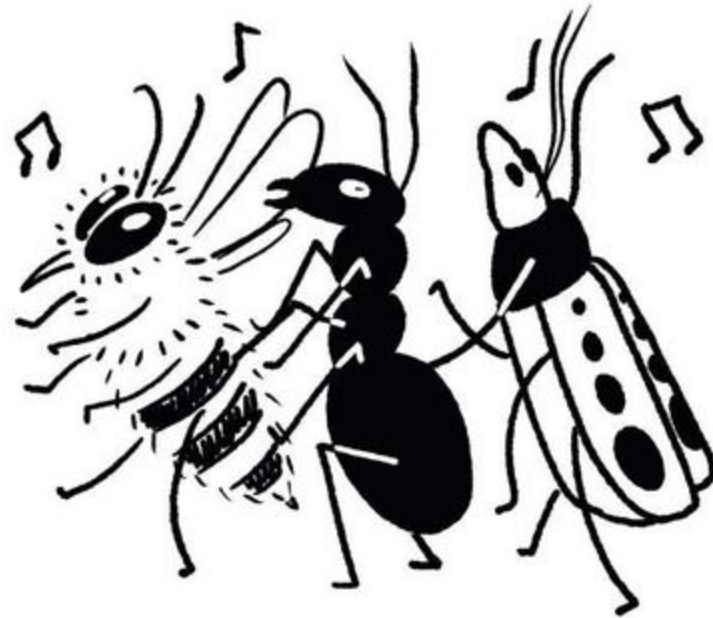
## **PRACTICES IMPLEMENTED IN THE VINEYARD**

- Drip irrigation in all our vineyards.
- Weather stations measuring water needs allowing us to limit irrigation as needed.
- Mapping our soils to determine the best combination of cover crops, limited irrigation, and pruning methods for optimal quality and terroir expression.
- Training cycle with experts on the water situation in areas where our vineyards are located.





# BIODIVERSITY




**T**he term “biodiversity” refers to the variability of life at all levels of organization, and how that variability affects the functioning of ecosystems.

One of the main threats to biodiversity is the global food system. Over the past 50 years, humans have changed ecosystems more rapidly and extensively than across any comparable period in human history. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth.

Changes to our ecosystem have contributed to net improvements in human well-being and economic development, but these benefits have been achieved at an ever-growing cost which, if unaddressed,

will greatly diminish the advantages that future generations may derive from ecosystems.

Our aim is to preserve and restore the species that inhabit the ecosystems where our vineyards grow, boosting their resilience and maintaining their natural balance. Studies in biodiversity are conducted at Adrianna Vineyard, located in the Gualtallary region of Tupungato, Mendoza, at 1450 mts. above sea level. We concentrate on this vineyard to acquire knowledge and experience that can later be translated to our other vineyards. Thus far, our work has focused on the study of soil micro-organisms, pollinizers, birds, and the native vegetation.

A close-up photograph of a green leaf with a yellow flower cluster on the right side. The background is a soft, out-of-focus green. The text is centered on the left side of the image.

**39% of our vineyard land is native forest in virgin conditions, preserving the ecosystem and the natural habitats of fauna, flora, and fungi.**



## ORGANIC FARMING

**T**he production of organic wines relies heavily on taking care of the environment, the soil, and all the biotic factors of the ecosystem, while avoiding the use of chemically-synthesised pesticides. The climate of Mendoza – the dryness or low humidity – makes it easy to farm organically. The pressures of pests and fungi are minimal compared to Burgundy or Bordeaux, for example. Our plants have remained, overall, remarkably healthy, and virus-free, which is why we give such importance to the health of our vineyards (see Section V).

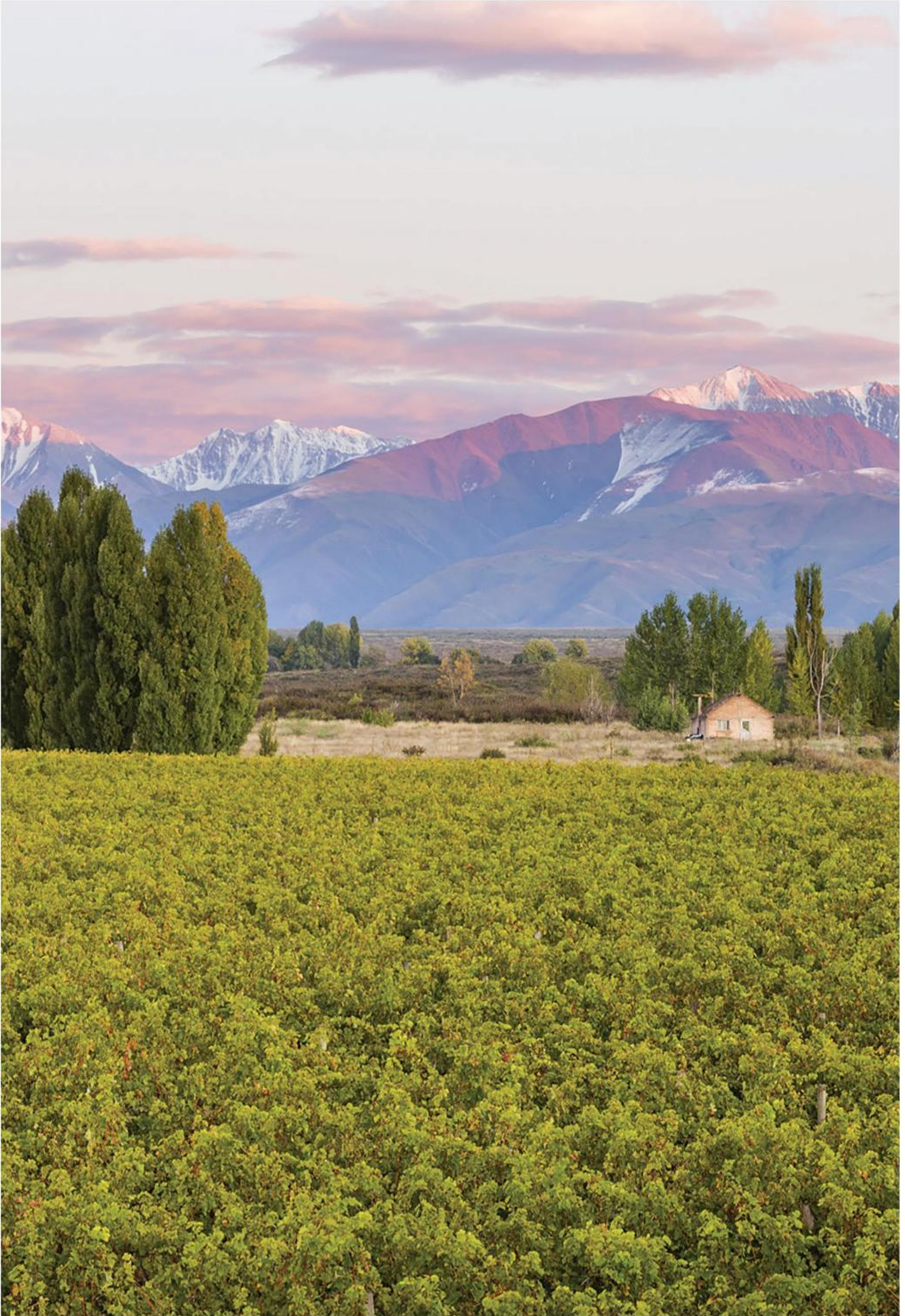
At Adrianna, we maintain 13 hectares of biological corridors where the natural ecosystem is preserved. In all our family's vineyards we aim to leave an average of 40% of the land in virgin condition with native species – this is one of the most impactful steps we can take to preserving the ecosystem and the native habitats of fauna, flora, and fungi.

**'Sustainable farming is the only way forward. We work tirelessly to preserve our regional ecosystems – each as unique as the flavor of our wines.'**

LAURA CATENA







## COVER CROPS

Cover crops are in many ways the lifeblood of the vineyard. They help fix nitrogen in the soil and compete against “water-stealing” grasses. The ideal cover crop is perennial or self-seeding, and not too vigorous in the summer. Cover crops are essential for regenerative farming through their role in carbon-sequestration. We’ve studied both native and exotic species, and found an exotic species (*Medicago lupulina*), that adapts well to the Uco Valley and has the ideal features of low water needs and well-controlled summer growth. Our current research focuses on finding an economically sustainable way to reproduce the best adapted cover crops as well as a way to reliably measure and enhance their carbon sequestration and nitrogen fixing capabilities.

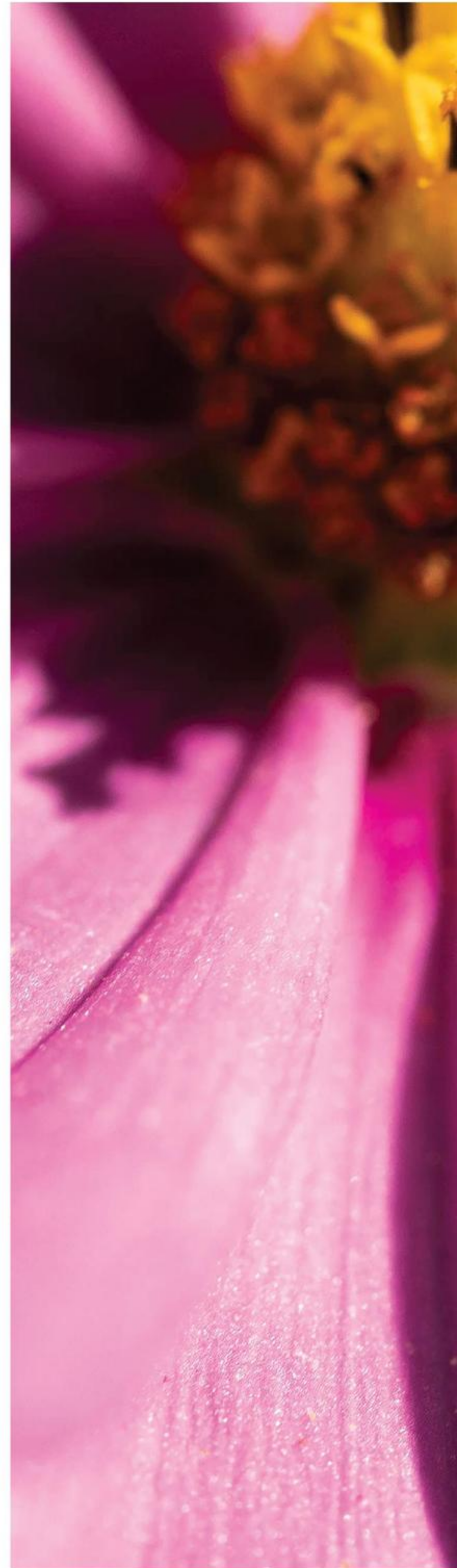
Low tilling and well-chosen cover crops play an important role in keeping the soil healthy and enhancing carbon sequestration. Many viticultural regions are doing research to quantify carbon sequestration to be able to accurately report their carbon footprint. This kind of calculation, however, needs to be undertaken locally, because carbon sequestration levels will vary depending on soil type and specific cultural practices. The CIW is undertaking a multiple year study that will enable us to calculate carbon sequestration in Mendoza. Once obtained, this data will be widely shared with other producers in Argentina.





## POLLINIZERS & NATIVE VEGETATION

In collaboration with the INTA's (National Institute of Agricultural Technology) multidisciplinary Biodiversity in Vineyards team, we studied the general biodiversity of the Adrianna vineyard over the seasons 2017/18 and 2018/19. We sampled the vegetation, pollinating insects, predator insects, and birds. A broadly diverse population of pollinizers helps maintain the diversity of flowering plants which, in turn, offers food and refuge to other natural pest controllers such as predator and parasitoid insects. Because of the diversity of this group of insects, we are only studying a few groups. During the first study period, more than 70 species were registered in the interior and borders of the vineyard, with 33 species of pollinizers.





## NATIVE BIRDS

The 22 bird species observed at Adrianna vineyard are benefitted by the arboreal and bushy vegetation of the vineyard and channels, which provide refuge, feeding, and nesting sites. One half of the registered species are insectivorous. In the process of feeding, therefore, they help reduce the incidence of pests that might endanger the health of our vineyards.

We have installed nesting crates for use by our bird population, among them the ‘Pititorra’ (*Troglodytes aëdon*), which takes particularly well to artificial refuges. Over the course of two seasons, 2018-19 and 2019-20, this species has occupied 14 nesting crates. An additional 30 nesting crates were incorporated into the Adrianna, Altamira, and La Pirámide vineyards during the 2020-21 season.









## SOIL LIFE

**A**s part of our research on soils, the CIW performed an in-depth study of the bacteria present at Adrianna vineyard – a project carried out in collaboration with Mendoza’s Instituto de Biología Agrícola (IBAM). The microbial study showed that there are different microbes at different altitudes and in different kinds of soils. the roots and even within the radical tissue, encouraging plants to synthesize certain metabolites that help them cope with stressful situations such as drought. They help us, too, in the drive to farm without the use of pesticides and in the preservation of water. With the aim of better understanding

**“Life in our soils was a mystery. Our research proved they were alive. We suspect the microbes we found make our vines resilient to water shortage and climate change.”**

FERNANDO BUSCEMA

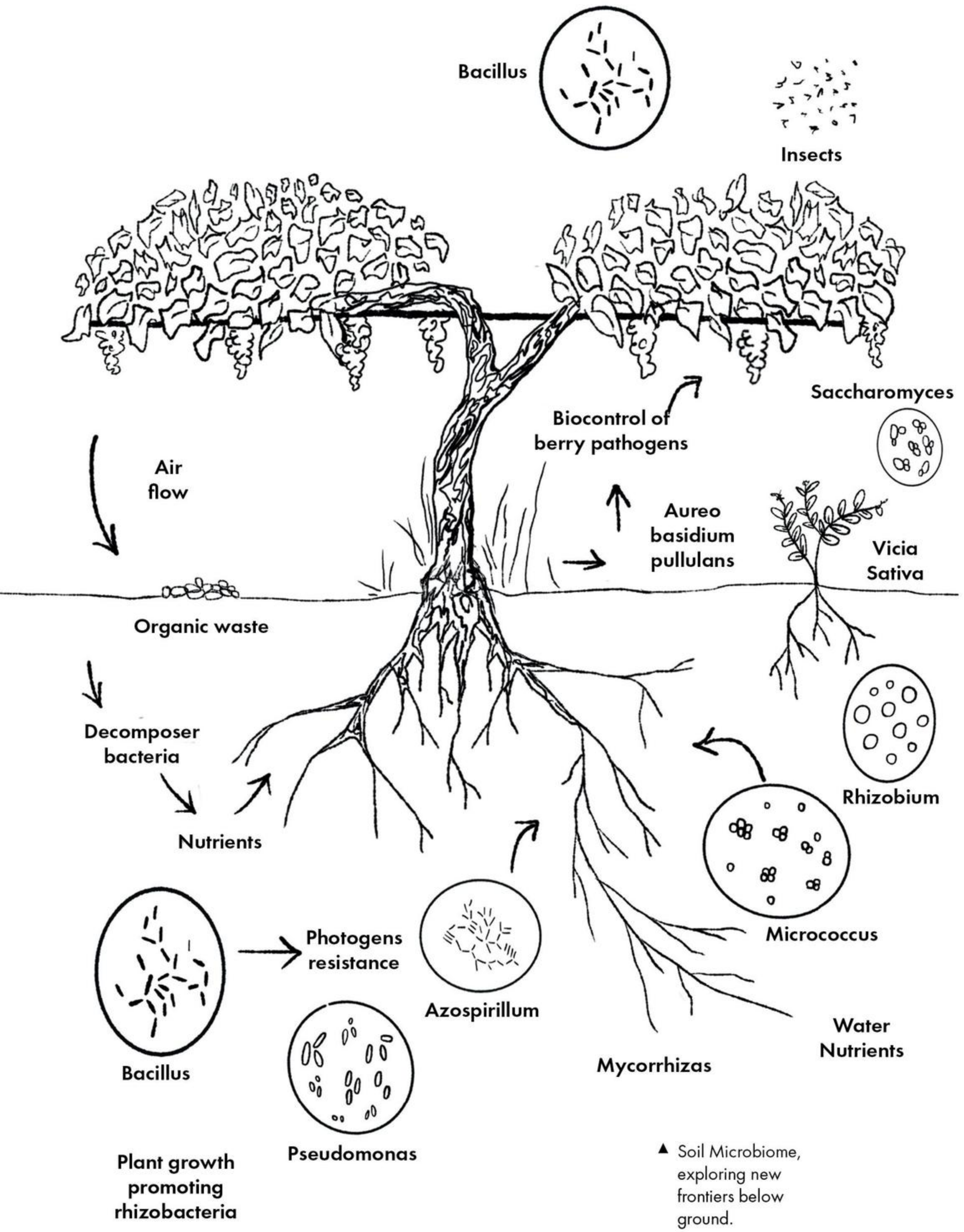
To our surprise (and delight!), we found microbes that had not been described in the literature. Two of these were identified as having characteristics that promote plant growth. These bacteria grow around the diversity of soil micro-organisms (bacteria and fungi), we have collaborated with the Instituto de Biología Agrícola, the Universidad Nacional de La Plata (Argentina), and Aarhus Universitet

(Denmark), using molecular DNA analysis. This technology has a superior reach to the cultivation of micro-organisms in petri dishes (used previously), which allowed only for 10% of the overall microbial species/populations to be identified.

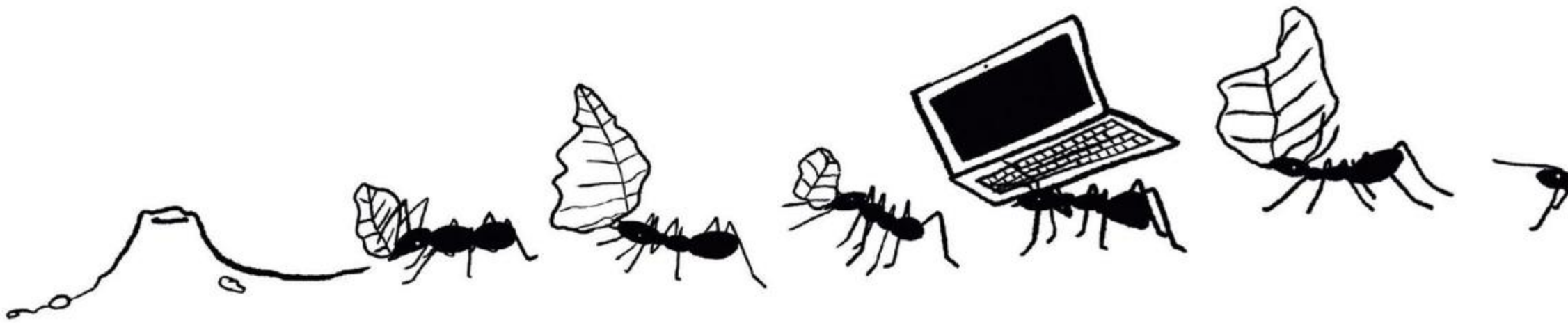
This most recent study, which took place over the course of two years and at two different sampling depths (30 and 60cm), will allow us to examine the differences between micro-organisms present in contrasting soil parcels: one at more than a meter from the first layer of soil, and the other at less than 45cm. Understanding the life in our soils will help us find better ways to preserve it.

***Around 25% of global biodiversity is found in soils. Understanding life underground will help us find better ways to preserve it.***





## HORMIGUITAS



**W**ith organic management, biodiversity comes naturally: plant and animal species thrive within a healthy and preserved ecosystem. This is usually good news – as is the case with owls and a variety of flowers. But not always. Pests are, for the most part, easy to control with synthetic pesticides. How to deal with them without chemicals, however, can be tricky. In our experience, it also demands some creativity. Today, one of the greatest threats to our organic vineyards is the small (but deadly) leafcutter ant.

Native to Central and South America, leafcutter ants can have a disastrous effect on vineyards, causing significant loss of grapes. They work as a team to climb the plants, cut the leaves and carry the fresh material back to the nest. Their entire organization works as a superorganism towards a single goal:

feeding the fungus that is their main food source. Within the colony, one finds the queen, her progeny, and the workers which perform different tasks like defence, brood care, or waste management.

Watching the leaves and grapes of six entire vines vanish overnight was terrifying and sprung us into action. As with other challenges, our immediate response was to reach out to the experts,

***Today, one of the greatest threats to our organic vineyards is the small (but deadly) leafcutter ant.***

get informed, and understand the problem. We met with local researchers working on this particular species, who advised us on the use of barriers – natural obstacles that cut off the ants' path, wasting their time before entering the vineyard. But



there was no single, simple solution: we tried offering the ants alternative crops so they wouldn't use the vineyard as a feeding site; we used a natural mix of fungi as a biological solution to reduce the size of colonies. Over time, we became experts ourselves.

In the end, we found a different kind of answer than the one we set out to find. As Guillermina van Houten, Organic farming researcher at the CIW, now believes: "practicing organic farming demands a change of mindset, a paradigm shift. When it comes to leaf-cutting ants, this means tolerating a certain amount of damage." Today, we've come to think of the ants as our companions – perhaps our least favorite neighbors – with efforts aimed at controlling, rather than eradicating their populations.





# HEALTHY VINEYARDS OF THE FUTURE

**V**iruses can have a detrimental effect on the quality of the grape, especially in relation to colour and aromas, disturbing the ripening process and lowering quality. Viruses can also affect quantity, significantly lowering yields. In line with our philosophy to be sustainable and efficient in the management of our vineyards, maintaining the health of our vines is essential – with the same number of resources per hectare, vines that are virus-free will provide higher yields and higher-quality fruit. With the health of our vines as a priority, requiring urgent and sustained attention, we began the process of reproducing (and cleaning) plant material from Mendoza. Our efforts are focused, in particular, on clones and massal selections of pre-phyllloxeric Malbec (the Catena Cuttings, discussed at length in part 2), clones of Bonarda, and other varietals. Using varying techniques, we cleared some of this material of viruses, while also seeking out virus-free plant material – ‘clean’ plants certified by the local sanitary authority – to supply our vineyards. At the heart of all this is the vineyard of La Soledad, a nursery housing all our virus-free, mother-plant plots, including both scions and rootstocks.

## UNDERSTANDING PHYLLOXERA

**P**hylloxera is a grape vine pest caused by an aphid that feeds on roots. In Argentina, it has been present since 1878. How is it that this pest – the source of so much destruction and devastation in Europe – has not, so far, significantly affected our vineyards? While it isn't considered a threat today, climate change and its corollaries could alter the plague's behaviour and impact our vines, creating a risky situation.

In 2013, one of the internal debates at the CIW was whether to continue planting ungrafted vines (Malbec with Malbec roots), or using American rootstocks, which have proven especially successful in battling diseases transmitted by ground insects such as phylloxera.

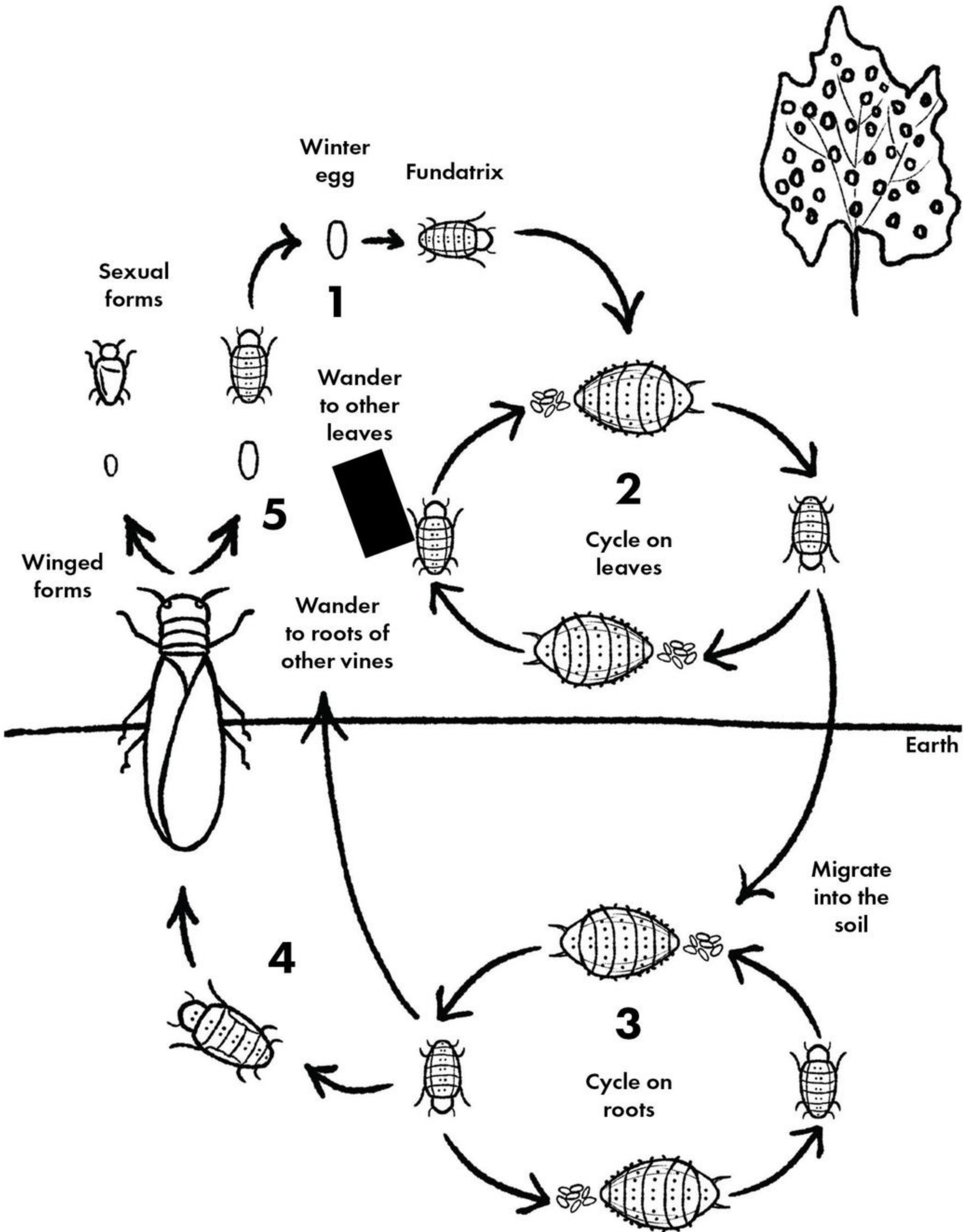
Argentina has minimal numbers of phylloxera, is geographically isolated from the world, and performs strict controls on plant material entering the country – the risk of external contamination from phylloxera appears to be extremely low.

Given all this, 'how can you guarantee that phylloxera won't affect Argentina in a context of climate change?' Laura Catena asked the team during a routine meeting.

But an answer was not forthcoming: we could not describe the current situation in Argentina on the basis of available research. This activated our usual *modus operandi*: 'let's call an expert.' We contacted Dr. Andy Walker, world expert in phylloxera and professor at the Department of Viticulture and Enology







▲ The lifecycle of *Daktulosphaira vitifoliae* (a.k.a. Grape Phylloxera)



at UC Davis. He listened closely to our case, but finally concluded: ‘to be honest, I can only recommend carrying out a local study.’ The need to understand our Nature in Argentina was doubly confirmed.

The next step was finding the most prestigious research institutions in Argentina to get up to date on current work and

approaches towards phylloxera. We hoped to find a local expert that might help us understand the topic. We were surprised to come up empty handed: there were no ongoing investigations or specialists to draw on. This is natural, perhaps, for a region where phylloxera has yet to become a threat.

As usual, Laura’s decision was: ‘well, then we’ll do it ourselves’. Andy Walker was enthusiastic about the idea, and we created a team of researchers from the CIW, Universidad Nacional de Cuyo, UC Davis, and IBAM (CONICET). The challenge was twofold: to generate knowledge on the topic, and to train a local expert that might allow us, and the broader Argentine viticultural sector, to make informed decisions regarding the future of our vineyards. Over the following

five years, we worked together to examine the presence of phylloxera across different regions and its impact on diverse grape varieties and rootstocks. We found the genotypes present in Argentina were less aggressive than those predominant in Europe or California, and in the absence of

an aerial cycle (which allows for sexual reproduction), they failed to develop into new genotypes

better “adapted” to local conditions. Our work continues: it remains crucial that we monitor our vines for the appearance of phylloxera’s aerial cycle as climatic conditions change.

***How is it that this pest – the source of so much destruction and devastation in Europe– has not, so far, significantly affected our vineyards?***



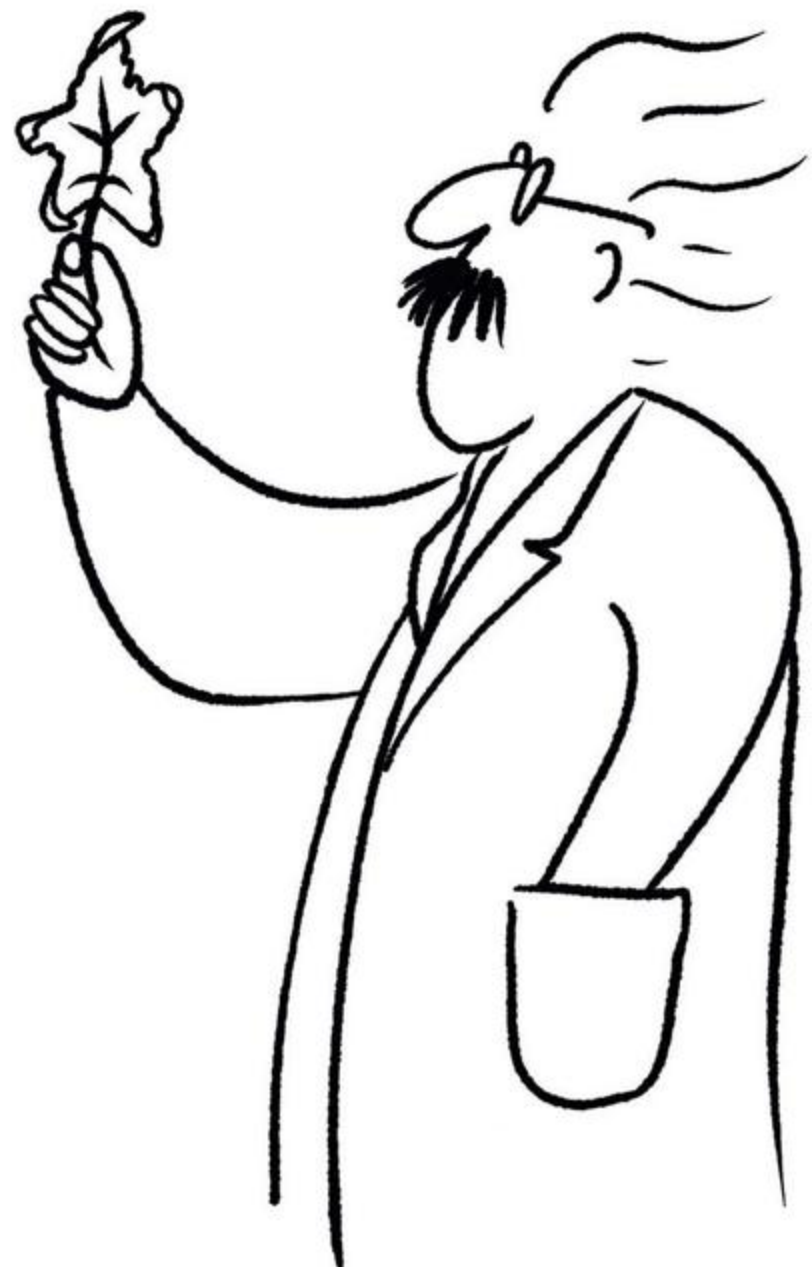


## VIRUSES

**W**ith the aim of mapping the incidence of the 10 most widespread viruses (on a Global level), we carried out a collaborative study with the INTA's Laboratory of Fitovirology, analysing samples drawn from 26 parcels across 11 vineyards in Mendoza. Our findings showed that vineyards in the Uco Valley region had a lower incidence of the different virus strains found to be present in Mendoza. Prompted by this study, and drawing on its results, we created a nursery to grow virus-free plants.

Located in the Rivadavia district of Eastern Mendoza, La Soledad vineyard (the lonely one), as its name suggests, lies in complete isolation, without any vineyards around. This is intentional, and key to its role as a nursery for virus-free plants – for the plants to remain healthy, they must be kept at a safe distance from other vines. At La Soledad, we grow our mother plants

and virus-free stock under strict biosafety measures to avoid any contamination to the vines (from insects or other). Here we preserve biological material which does not exist elsewhere in the world, including the Catena Cuttings, the largest collection of genetically distinctive Malbec plants in the world.



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SCIENCE TO PRESERVE  
**CULTURE**

PART II






# RECOVERING ANCESTRAL TRADITIONS

In Mendoza, winemaking was made possible through the work of the indigenous Huarpe people, who built complex irrigation canals in the pre-Colonial period that transformed our mountain brush into rich agricultural land. Viticulture developed with the introduction of European *Vitis vinifera* in the 16th century, with traditions and practices evolving over the next five hundred years. Decisions around how to water and when, about what cover crops to use, about how to prune, about which variety to plant, and when to harvest, were passed down from one generation to the next. The waves of Spanish and later Italian immigration in the 19th century, brought a renewed enthusiasm for winemaking – all those immigrants needed their wine above all else – and with them came a new set of traditions, which turned our region into what it is today. If you stop a person on the street in Mendoza, any person, and you ask them if they make wine, they will either answer yes, or tell you about their mother, sister, cousin, or best friend who works at a winery.

At Catena, we're studying how to preserve the traditions of old, those practices passed down over millennia, that give our wines their true flavours. Consider, for example, irrigation. This is not a Monday, Wednesday, Friday kind of thing, but an art – combining star gazing with ant observation, bird song listening and the texture of leaves, in order to know when our vines might need a little glacier water to thrive. This holistic vision and practice is taught over no less than 10 years by one vineyard manager to the next. With climate change, we want to re-examine and recover these cultural traditions, evaluating the need, or lack thereof, for modifications on the basis of current conditions. Part of a sustainable future for winemaking involves studying these traditions, revising, and updating them where necessary. Our future is only as good as our land and people.



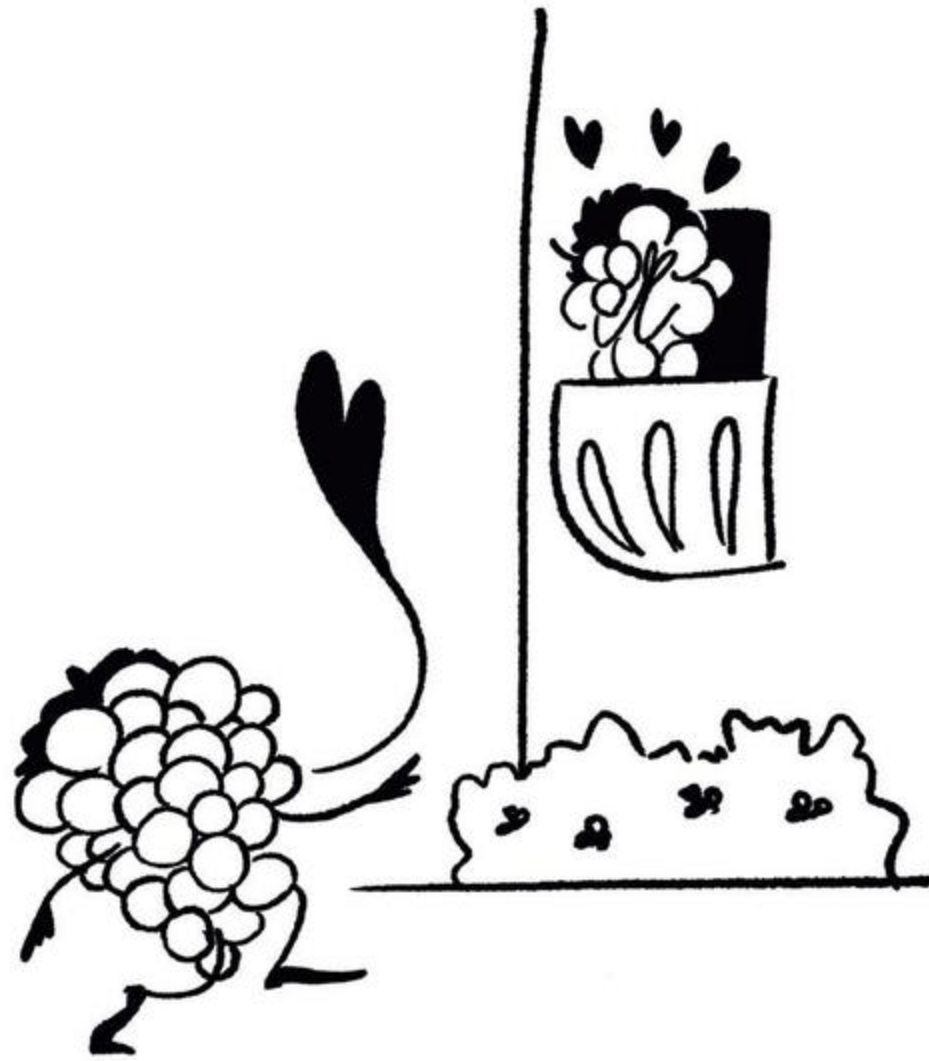
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The background of the image is a natural landscape. The top half is dominated by a clear, deep blue sky. Below the sky, there is a line of green, scrubby bushes and grasses. The foreground consists of light-colored, sandy soil with several small, green, leafy plants growing from it. The overall scene is bright and open.

Our efforts are guided by a deep respect for the past – an urge to understand the traditional farming practices of our ancestors in our efforts to build a sustainable future. We’re part of a movement that looks to the past for wisdom and guidance – to the lessons learned through trial and error over the course of millennia. We want to recover the positive in these ancestral traditions and bring them forward into the future. We work with concrete vats, for example, used traditionally in Argentine viticulture. The archaeological evidence is there: we have 400-year-old ceramic vats in Argentina (and even older ones in other parts of the Spanish Americas), made with tierra cocida. We have our gaze set on this search for ancestral practices and wisdom – incorporating the lessons passed from generation to generation. Our vision is tied to that respect for our past and land, for methods developed over time. Our aim is to understand and recover them.



# LOCAL VARIETIES



Over 90 percent of Argentina's vineyards are ungrafted and many of our pre-phyllloxeric selections have been lost in Europe. Because Argentina remained largely isolated from the world due to years of political and economic turmoil in the 20th century, most Argentine vineyards were planted and reproduced through massal selections (by taking cuttings from select plants in the vineyards and planting them in a new site). The result of this is a

genetic diversity that, in the rest of the world, can only be found in very old vineyards. This genetic diversity that has also changed from planting to planting, and through epigenetic adaptations to our climate, has created a population of immigrant plants that we can now call our own. Below is a list of the varieties that through a mix of historical chance and optimal winemaking results have become widely planted in Argentina.

## MALBEC

There is so much to say! Laura Catena and Alejandro Vigil have dedicated their lives and an entire book to this varietal: *Malbec Mon Amour* (Catapulta Editores, 2021).

It was one of the great grapes of France, brought to fame by Eleanor of Aquitaine, later to become one of the six varietals authorised for use in Bordeaux's eponymous blend. But in the aftermath of the catastrophic phylloxera pandemic that devastated European vineyards in the late 19th century, Malbec faded from view. The deep blue varietal from Cahors might have been consigned to history, were it not for a wildly unconventional French agronomist, Michel Aimé Pouget. In a well-known episode, the native of Tours introduced Malbec to Mendoza under the auspices of future president Domingo F. Sarmiento. The ungrafted, pre-phylloxeric vines flourished in their new home: the dry, Andean climate proved a perfect antidote to the low yields and coulure that dogged Malbec in Bordeaux.









## THE RISE OF ARGENTINE MALBEC

Malbec flourished in Mendoza, claiming a central role in Argentine wine production until 1970, when domestic consumption shifted dramatically from reds to whites and towards jug wines. Producers responded by replacing French varietals with the higher yielding Criolla, Cereza, and Pedro Jimenez. By 1990, of some 50,000 hectares of Malbec recorded at mid-century, only 14,000 remained. In the words of a well-known vintner, if you grew Malbec in the 1980s, ‘it was because you loved the vine. It didn’t even cover your costs.’<sup>1</sup> Don Domingo Catena (Nicolás Catena Zapata’s father), loved Malbec. He kept an old vineyard in the valley of Lunlunta, planted around 1922 on the banks of the river Mendoza, that he named Angelica after his late wife. Honouring Domingo’s wishes, Nicolás maintained the vineyard after his father’s passing. Within a decade, Nicolás would be spearheading the Argentine Malbec revolution.

As we set out to make top quality wines with an ancient, largely forgotten varietal, the need for rigorous, controlled studies became evident. Our research began with massal selections taken from lots 18 and 20 in Domingo’s historic Angélica vineyard. Directed by Laura Catena, this was the CIW’s inaugural project. There were 135 cuttings that launched the largest collection of Malbec plants in the world: the Catena Cuttings.

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<sup>1</sup> Cited in Ian Mount, *The Vineyard at the End of the World: Maverick Winemakers and the Rebirth of Malbec* (New York: 2012), p.223



## THE CATENA CUTTINGS

The importance of plant selection to the health of our vineyards and quality of our wine cannot be overstated. In the centenarian vines at Angélica, we knew we had something special, especially in lots 18 and 20 – wine from this part of the vineyard was exceptional. So there had to be something about those particular vines that was special, and we wanted to preserve it. We began with a massal selection, and a selection of 135 individual plants with valuable characteristics: balanced, low yielding, with small, concentrated berries, isolated and reproduced in our high-altitude vineyards, ensuring the continuation of our mother population. Massal selections from Angélica were also reproduced in other vineyards, and a further 15 clones are selectively planted, one per parcel, in different vineyards. Both the massal selection and individual clones were also planted at Nicasia and Adrianna vineyards, in Altamira and Gualtallary, to examine the effect of high-altitude terroir on plant behaviour. The combined practices of clonal and massal reproduction are especially important in the context of changing climatic conditions, maintaining both genetic diversity and the health of our vines.

The CIW maintains the largest collection of Malbec plants in the world. For twenty-five years, the Catena Cuttings have been studied ceaselessly: their yields, cluster size, composition, and flavours (some spicier, some more floral or tannic). Every harvest, their behaviour is observed and recorded. All of this requires patience and commitment – a cutting takes three years to give its first harvest. We have also shared this genetic material with the wider Argentine wine community. In the face of changing environmental conditions, preserving the genetic diversity of our vines is increasingly important.

## BONARDA

The 3000-year-old Bonarda has a long legacy in Argentina as the second most widely planted grape in the country. This sturdy variety shares Malbec's French heritage – in the 19th century it was widely planted in the Savoie under the name Douce Noir. Like Malbec, Bonarda was saved from near extinction by its survival in Argentina – with an approximate 18,000 planted hectares, representing the largest area in the world cultivated with this variety. Bonarda's late ripening makes it an ideal varietal for a warmer climate future. We source some of our Bonarda from La Vendimia, an old-vine vineyard surrounding the Catena family home in Rivadavia, Mendoza, where we also maintain a unique collection of 41 clones of this varietal. Argentine Bonarda makes a rich wine that ripens late in the season, with fruity and intense aromatics, and a silky texture, lighter than Malbec.





## CABERNET SAUVIGNON

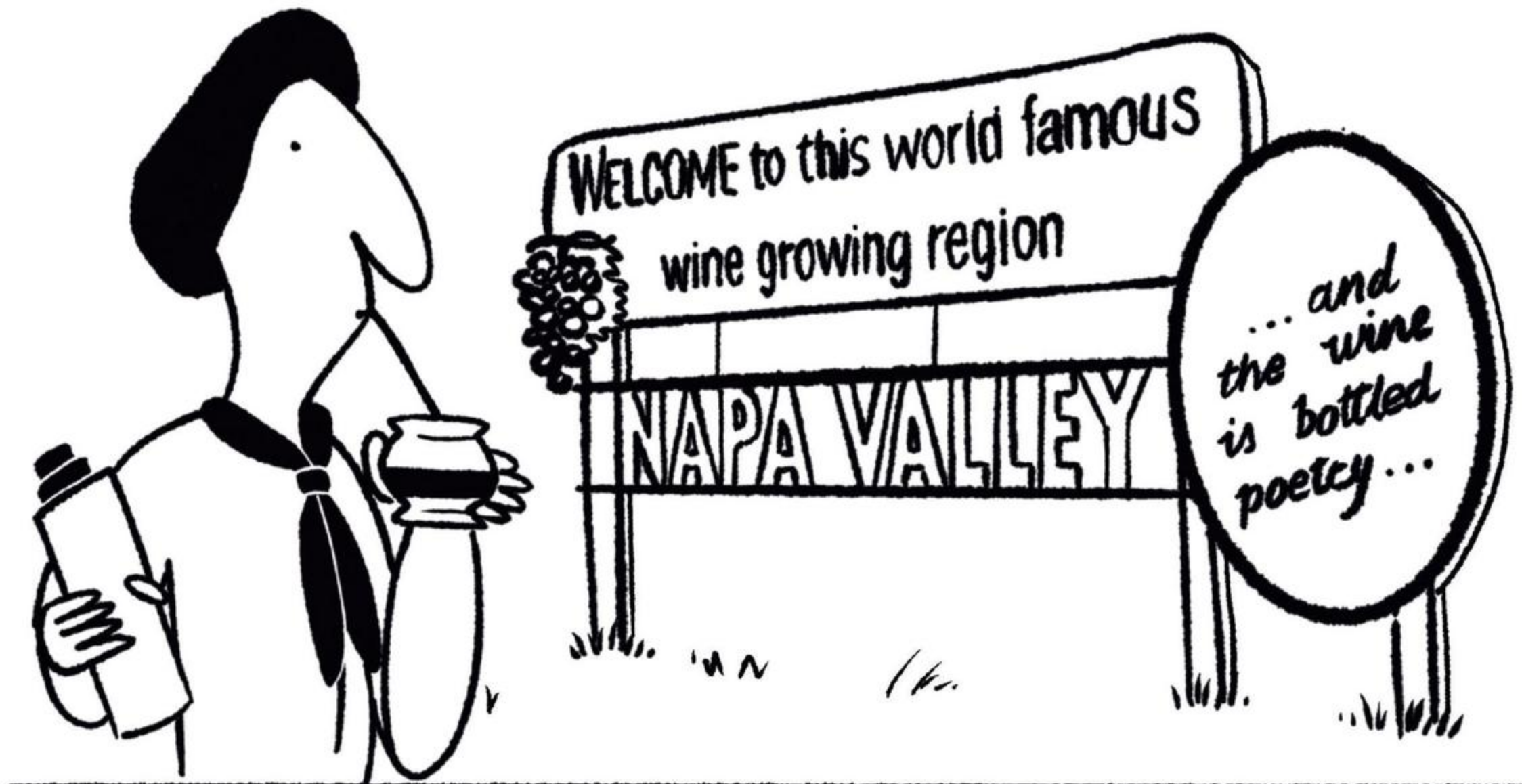
Old populations of Cabernet Sauvignon reached Mendoza around 1850, alongside Malbec – at the time, the two most important varieties of the Médoc – as part of a larger project commissioned by then-President Domingo Faustino Sarmiento and led by the eccentric French agronomer, Michel Aimé Pouget. Planted across different regions in the Province of Mendoza, Cabernet became an important varietal in Argentine wine production. In the 1960s, Catena's Saint Felicien became the leading premium Cabernet Sauvignon brand in Argentina. Our first high-elevation Cabernet vineyard was at Agrelo in Luján de Cuyo. The La Pirámide vineyard was planted in the late 1970's, when Agrelo was considered the best region for Cabernet. More recently, our Cabernet Sauvignon vines from La Pirámide have been reproduced by massal selection in El Cepillo and Altamira.





## THE STORY OF CLONE IV

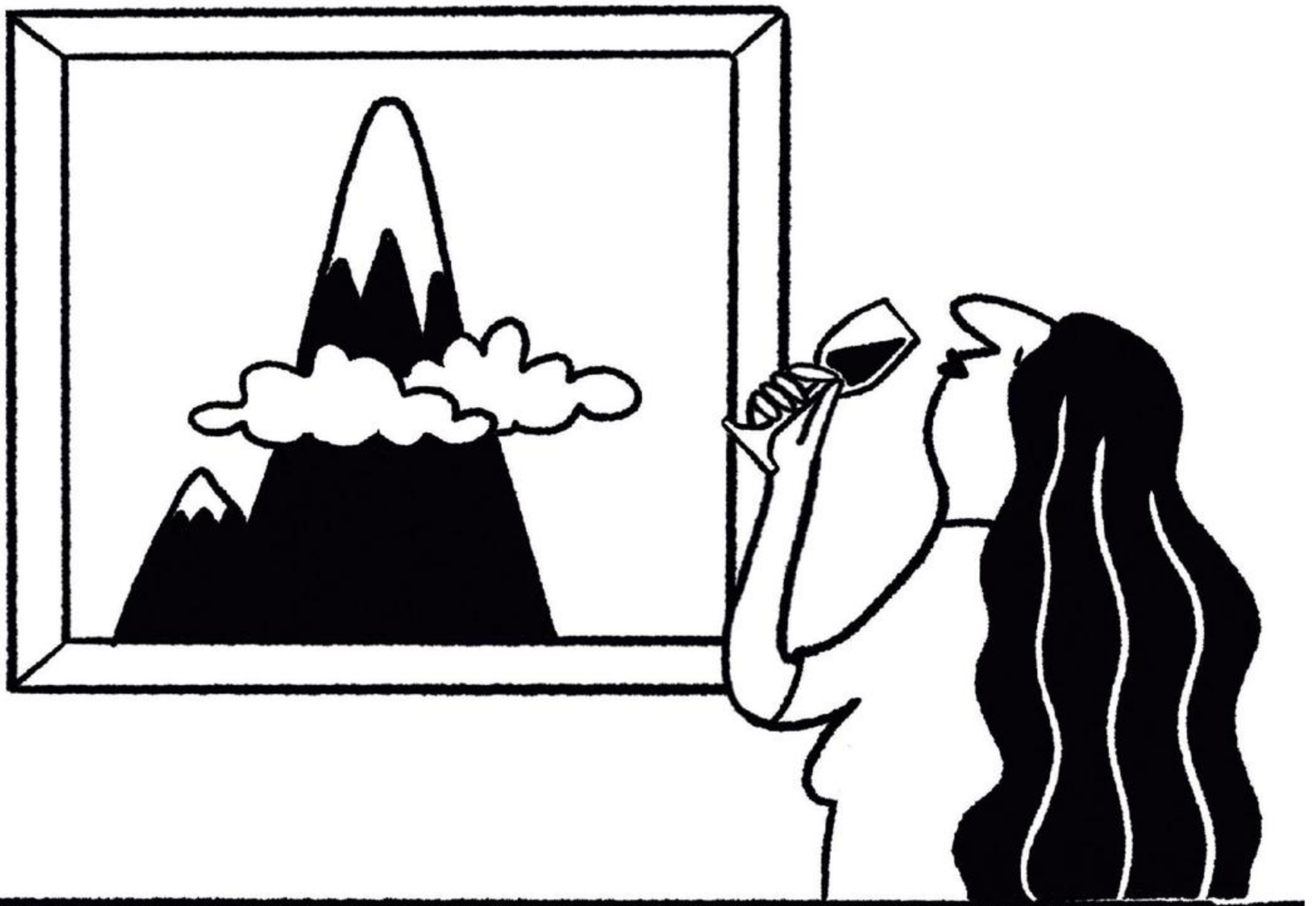
In 1964, Cabernet Sauvignon clones 4 and 5 were introduced to the USA from Mendoza. The selection arrived with the erroneous label "Merlot", clone 11. It was later properly identified and would successfully complete testing for the California Grapevine Registration & Certification Program in 1966. The related clones 6, 7, 8 and 11 are cleaner versions of clone 4. In 2001, on a visit to Napa, Luis Reginato and Fernando Buscema heard a lot about a Cabernet Sauvignon clone 4, planted among other places in To Kalon. This low-yielding clone (and together with clone 6) was behind the 100pt Screaming Eagle and other celebrated wines. To their surprise, they later found the clone was, in fact, Mendocinian!





## HIGH-ALTITUDE CABERNET

As we pioneered high-elevation winemaking in Argentina in the 1990s, our first high-altitude Cabernets (Catena and Catena Alta), gained worldwide recognition. High-altitude Cabernet Sauvignons have more colour and tannins, greater aromatic intensity, and owing to the cooler climate, higher acidity. In the bottle, these wines are more acidic, have lower alcohol levels, are balanced and vibrant, with deep tones and intense aromatics. Anthocyanins – flavonoids responsible for the colour of wine – degrade when temperatures surpass 35 degrees Celsius. This kind of unwanted heat-related degradation, which is a concern for many of today's Cabernet regions because of climate change, is not a problem in high-altitude Mendoza.



## CRIOLLA

The Criolla grape is closely tied to the early history of Argentine wine. Brought to the Andean region of Cuyo by Spanish conquistadores in the 16th century, it took on a central role within Catholic ritual, as the wine most often used by the Church. Across the Colonial Americas, North to South, priests made sacramental wine using amphorae and botijas. To this day, the variety is known as País in Chile and Mission in California. A genetic match to the Spanish variety Listán Prieto, Criolla is a light-skinned red grape traditionally used to produce bulk wines of little distinction. Whereas the use of modern-day winemaking techniques for Criolla results in the production of serviceable wines, the adoption of natural winemaking procedures yields a quite different result: the time the juice spends macerating in its skins in tinajas ensures that the wine develops a rich texture, while the lack of added sulphur serves to increase the wine's aromatics. Today, these organically grown grapes from the historic Los Paraísos vineyard give us beautifully fresh and light natural wines.





# TORRONTÉS

Torrontés originated in Argentina from a mix of grapes brought to the Americas in the early colonial period – a cross between the Mediterranean Muscat of Alexandria and Criolla Chica (most likely an 18th century development, occurring by chance or design on Jesuit missions). Argentina's flagship white variety, Torrontés, is found in the world's highest vineyards, resting 5,000 to 6,000 feet above sea level in the province of Salta, to the North of Argentina, where the high-altitude growing conditions translate into beautifully bright aromas and a delightfully crisp acidity. Torrontés has extraordinary, 'terpenic' aromatics: very floral, very mineral, with a lot of white fruits. The grape can be susceptible to sunburn, so most vineyards are planted in a high pergola training system, or parral, filtering out some of the sunlight to create a protected, cool area around the maturing clusters. Our winemaking practices protect the extraordinary mineral and floral aromas of this wine: no oak (to avoid covering the aromatics) and no oxygen (keeping the wine in cool, stainless-steel tanks to limit oxidation).

The most widely planted white varietal in the country, Torrontés, has taken centre stage in the Argentine North, and within the Cafayate region of Salta in particular. This small town-district, located at over 5600 feet in elevation (1707 m.a.s.l.), is widely considered the best location for the varietal due to its cold nights and sun-filled days.





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# AGEABILITY

**W**e were keen to study ageability because it is a trait found in some of the great wines of the world (Chardonnay and Pinot Noir from Burgundy, Red Blends from Bordeaux, among others). We thought: if our goal is to make the highest quality wines, then we need to see how our wines – and our Malbecs in particular – are ageing. This is fundamental to wine as a collectible product. And yet there is little experience, on a global level, when it comes to the evolution of Malbec or what characteristics might be associated with a positive progression. The CIW is currently undertaking its own, long-term study on the topic. When we embarked on this project, our first mission was to develop a test that might accelerate ageing, allowing us to classify wines according to their greater or lesser potential to age well. Among other tests, one consisted in increasing the temperature of the wine for several weeks. In line with those of other researchers before us, however, we found

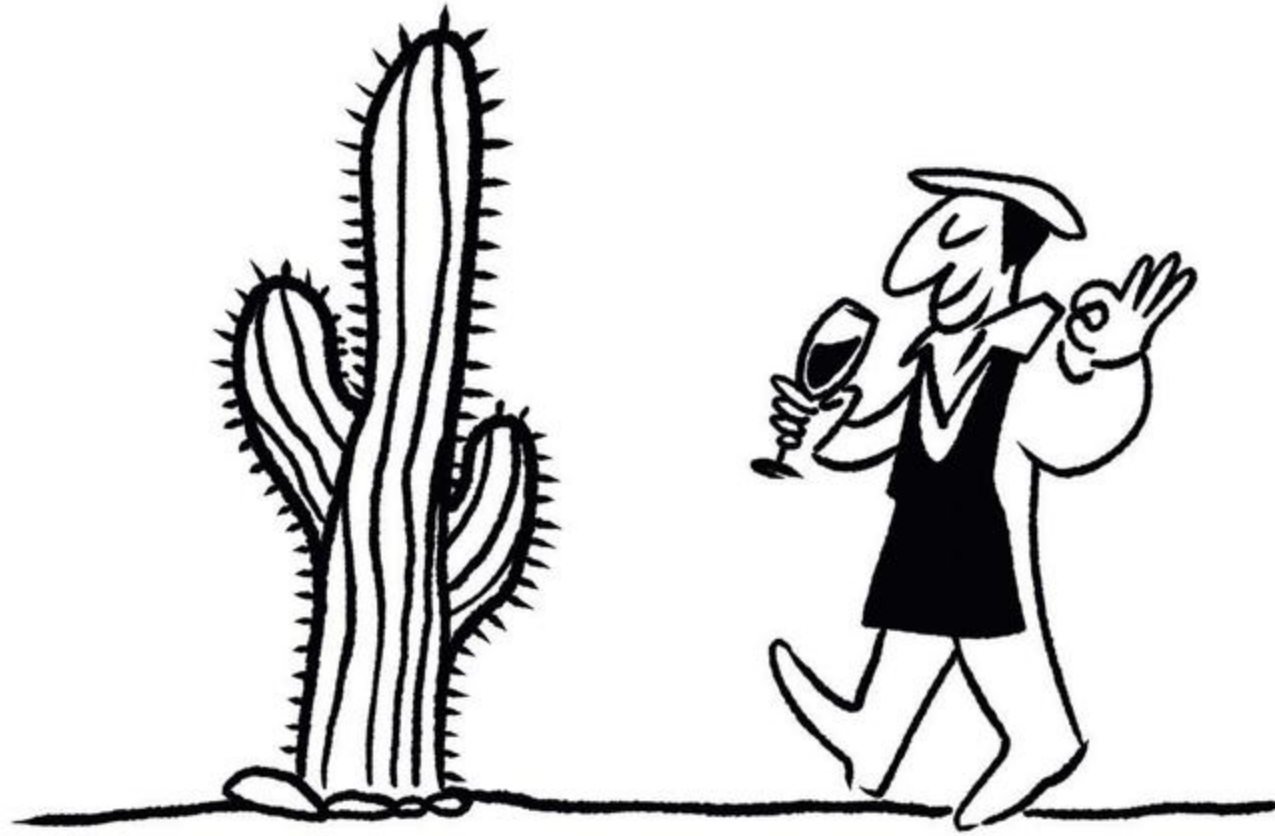
there are currently no available means to accelerate ageing in a way that simulates the natural process.

So we took the long way, analysing Malbec wines elaborated in the course of Fernando Buscema's research at UC Davis. For the first time, a study proved that after 5 years of ageing, different profiles remained distinguishable (in both Mendoza and California). The next step was to monitor what happened at 7 and 8 years, especially when it came to volatile compounds. One compound of interest, typical of Malbec's violet aromas, is ionone. We observed that it remains present for longer in Malbecs from Mendoza than in those from California, suggesting the Argentine wines maintain the character typical of their region for longer. Studies of this kind are essential to all wine regions, allowing producers to judge the ageing potential of each region objectively. Publication of this research is forthcoming.





# THE EAST AND THE NORTH



**A**s part of a long-term project aimed at promoting viticulture and winemaking in the East of Mendoza and other Argentine regions, we've planted new vineyards in the high-altitude valleys of La Rioja and Salta in the North, and La Pampa and Rio Negro in Patagonia. If we can bring high-quality winemaking to regions beyond Mendoza,

we also stand to have a significant impact on the economic livelihoods of local communities. 'We're excited about these new locations', says Laura Catena: 'The wines are very different from those of Mendoza, and we're finding pockets of vineyards with great individual character and concentration.'





## THE EAST

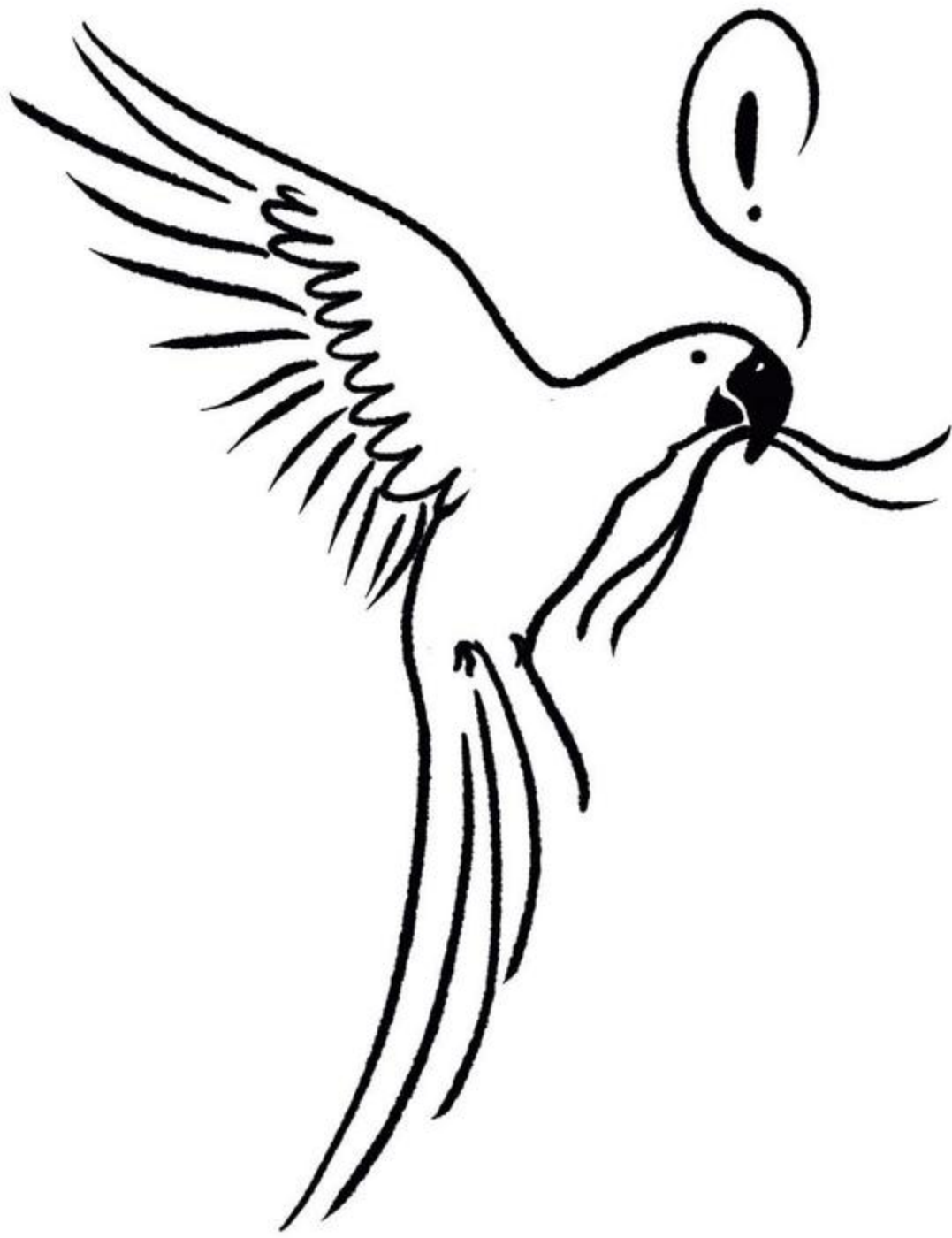
**W**e're working towards a revival in the East, one of the oldest and most traditional viticultural regions in Mendoza, where Criolla and Bonarda thrive, and where the dry weather and loamy soils make organic farming the norm. The region, however, has suffered visibly from an economic downturn over the past few decades, with many old vineyards being abandoned.

Our vineyards in the East lie at lower altitudes, between 730 and 800 metres above sea level – the climate is warmer, and the grapes tend to be less concentrated than those at cooler climates. A true desert climate, the region receives less than 8 inches of rain per year and gets an average of 330 of sunshine days a year. Some varieties really shine in the East, including Bonarda, Petit Verdot, and Tempranillo. If grown in the traditional pergola system, or parral, these varieties can reach extraordinary quality in the

East. The parral creates an umbrella of sorts, generating a cooler microclimate within the canopy, and shielding the grapes from the intense sun. Because of its height, the pergola system also protects the vines from frost. We continue to study and assess our vineyards in the East: each year we experiment with water stress and yield reductions to evaluate their impact on quality.







Mica Pereyra is the daughter of Hugo, the “master of the vineyard”, in Angulos, La Rioja. She is 20 years old and works the “atada” (tying) season when the vines are tied to wire. She handles about 30 parcels a day. During the “atada”, she stays in her father’s house and works in the vineyard alongside him. She’s an early riser and always carries her parrot Lolo on her shoulder. Lolo loves to untie every wire Mica ties; he is very naughty. Mica is studying at the local university to become a tour guide. She has been a volunteer firewoman since she was 16.







- ▶ One of our most promising vineyards in the east is an old Bonarda vineyard that surrounds the family's 100-year-old house: La Vendimia, in El Mirador, Mendoza.



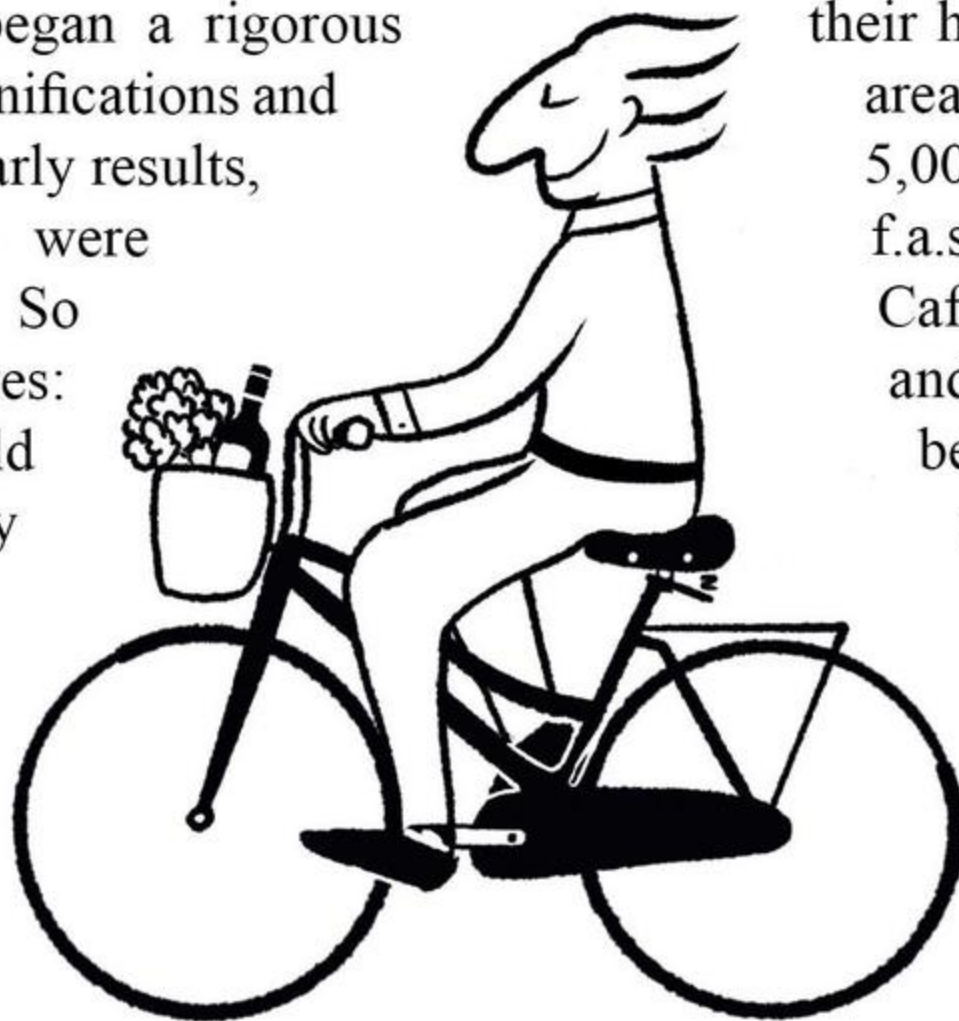


## THE NORTH

The melting of the Andean glaciers can only be reversed if the whole world reduces its carbon emissions. We began thinking: how do we continue to make wine in Argentina when our native province of Mendoza will have less access to water? To the North, in La Rioja and Salta, there were high-altitude valleys that had remained largely unexplored for viticulture. The Catena Institute began a rigorous process of microvinifications and soil studies. The early results, two decades ago were very promising. So we asked ourselves: what if we could elevate the quality of wines made there? Not only would we find a new source of wines, but we

also stood to transform the lives of people through economic opportunity as we have and continue to do in Mendoza.

The most important winemaking region in this area is Cafayate. The vineyards are located mainly in the Calchaquí Valley (GI), a system of interconnecting valleys stretching across 170 miles. The vineyards of Salta are marked by their high altitude; the cultivated area begins at slightly over 5,000 feet and reaches 10,200 f.a.s.l. at its highest elevation. Cafayate has a warm climate and cool nights. Its vineyards benefit from the shade and cool, dry nights characteristic of this high semi-desert valley. It is characterized by wide thermal amplitude with long summers



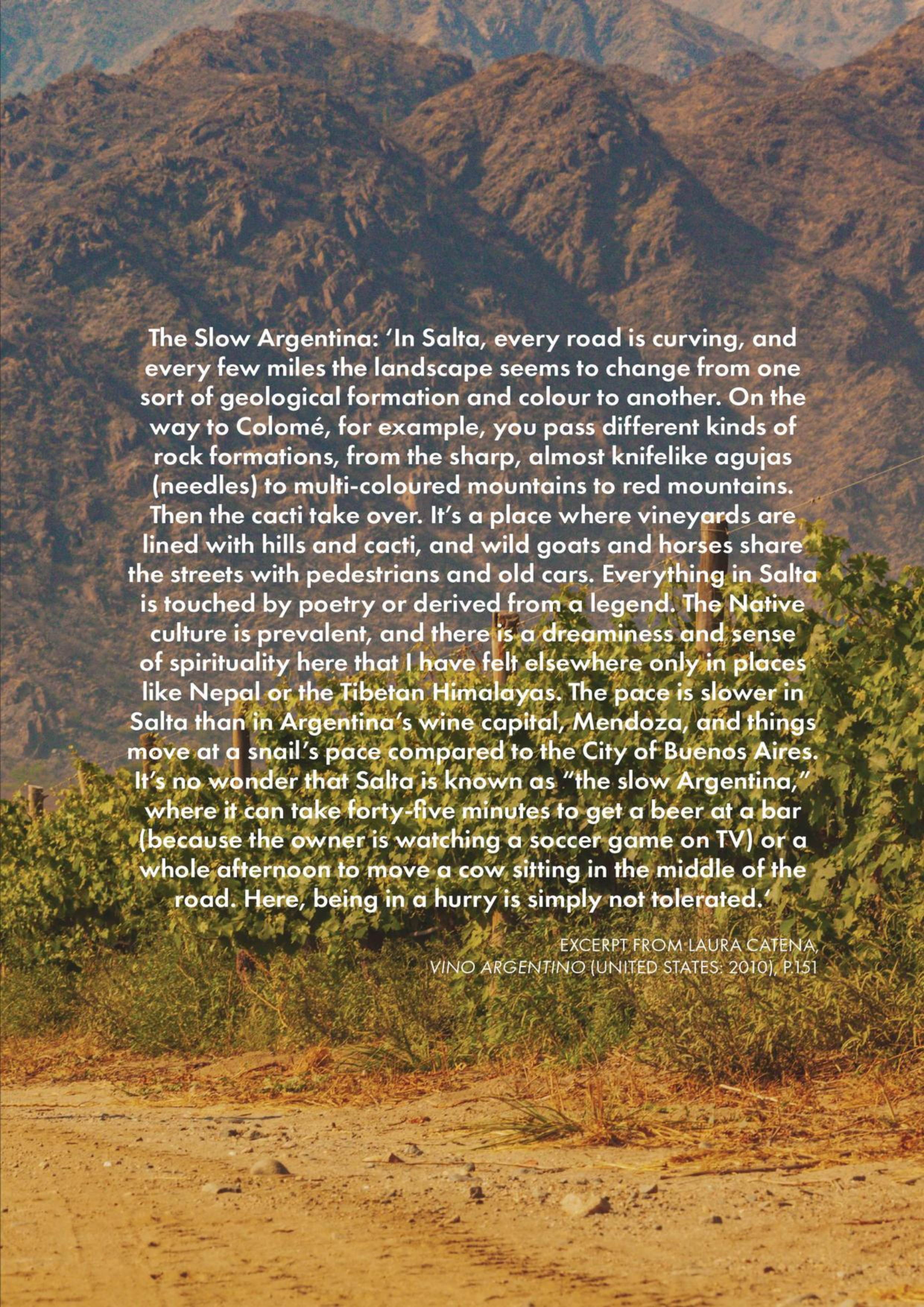






that allow for good growth of the vines and is also favoured by deep, sandy soils. The wines are lively, with good colour, aromas, and flavours with intense, mature tannins. Both whites and reds are fruity with prominent varietal typicity. Among the most emblematic red wines, Cabernet Sauvignon and Tannat stand out for their spicy aromatics and rich, ripe tannins. The village of Tolombón is located in the South of Cafayate, at the heart of the Santa María Valley on the Ruta Nacional 40, a highway that cuts across Argentina from North to South. It is the site of an ancient city, known as the political capital of the Calchaquí nations and the seat of the famous ‘Cacique’ (native chief), Juan Calchaquí. During the late 16th and 17th centuries, Tolombón was at the centre of indigenous resistance against the Spanish conquerors in what has come to be known as the Calchaqui Wars (Guerras Calchaquíes).





The Slow Argentina: 'In Salta, every road is curving, and every few miles the landscape seems to change from one sort of geological formation and colour to another. On the way to Colomé, for example, you pass different kinds of rock formations, from the sharp, almost knifelike agujas (needles) to multi-coloured mountains to red mountains. Then the cacti take over. It's a place where vineyards are lined with hills and cacti, and wild goats and horses share the streets with pedestrians and old cars. Everything in Salta is touched by poetry or derived from a legend. The Native culture is prevalent, and there is a dreaminess and sense of spirituality here that I have felt elsewhere only in places like Nepal or the Tibetan Himalayas. The pace is slower in Salta than in Argentina's wine capital, Mendoza, and things move at a snail's pace compared to the City of Buenos Aires. It's no wonder that Salta is known as "the slow Argentina," where it can take forty-five minutes to get a beer at a bar (because the owner is watching a soccer game on TV) or a whole afternoon to move a cow sitting in the middle of the road. Here, being in a hurry is simply not tolerated.'

EXCERPT FROM LAURA CATENA,  
VINO ARGENTINO (UNITED STATES: 2010), P.151






# COMMUNITY

PART III



# TOWARDS A SUSTAINABLE FUTURE

 Our commitment to informed action and sustainability requires a tremendous amount of work in the vineyard, winery, and beyond. The fruits of this labour have helped preserve and elevate our own and the wines of the entire region. Our work extends to ensuring this process also improves the lives of all those in our community. Most of all, it's a spirit of learning and dedication, the belief that knowledge belongs to the world, that our mission to continue producing wine in this region for centuries to come will only be realized by a communal effort, working with the larger Argentine wine community, and working generously – in our interactions and with our findings.

► Luis Reginato, Head  
Viticulturalist at  
Catena Zapata.



# A SUSTAINABILITY CODE FOR ARGENTINA

In 2008, Laura Catena began the transition towards sustainable agriculture at Catena Zapata. She realized that unlike so many other wine producing regions, Argentina lacked a sustainability code. Faced with this vacuum, Laura took her usual approach, embarking on the mission to develop such a code for Argentina. We began by studying existing codes from other regions and adapted them to Argentina, incorporating requirements specific to our ecosystem. We worked on a wide range of sustainability issues at the winery but felt it was necessary to move forward with a regional movement. So, we took our code to the Sustainability Commission of “Bodegas de Argentina”. This resulted in the development of a joint standard protocol, involving experts from different fields and institutions in Argentina: The Faculty of Agrarian Sciences of the National University of Cuyo, the National Institute of Viticulture (INV), and the INTA.

The Viticulture Sustainability Self-Assessment Protocol targets companies involved in the wine industry, including employees, suppliers, neighbours and members of the community, policy decision makers, academic entities, regulators, the press, and others. A first version of the Protocol was published in December 2011, with a second issued in August 2013. We are currently using Version 3, which was edited in 2018. Each review of the Protocol has made improvements in relation to environmental, social, and economic (sustainable) practices. Bodegas de Argentina grants a Sustainability Certificate to wine companies that have demonstrated compliance with the standards set out in the Protocol. This is done through a third party auditory, tasked with issuing a compliance report. To date, more than 80 wineries have been certified.

# INTERNATIONAL COLLABORATIONS

**T**he CIW is a founding member of the Sustainable Wine Roundtable (SWR), an independent, non-profit community of ‘viticulturists and vintners, wineries and wine shops, exporters and importers, associated businesses and academia, retailers and consumers, dedicated to improving global wine sustainability. At the Roundtable, we collaborate on a global level in the mission to make viticulture and winemaking sustainable. Sharing information, knowledge, innovations, and solutions, we’re working together to preserve our biodiversity, reduce water usage, farm without pesticides, improve farming practices for all, invest in our people, their livelihood, education, and health. In the words of Luis Reginato, head viticulturalist at Catena Zapata winery, and our representative, alongside Laura Catena, at the SWR: ‘At the Roundtable, I found colleagues from all over the world who are constantly thinking about

how to produce and sell wine sustainably. We consider and discuss different ways to care for our natural resources while also taking an active role in improving them. This includes human resources, too, those of populations and societies. Also important are the group forums where we share experiences and research to help us resolve common issues or difficulties. This collaboration and enthusiasm for growth and improvement have been truly inspiring.’

As a member of the Porto Protocol foundation, an international non-profit institution, committed to the mitigation of climate change, the CIW collaborates with hundreds of wine industry members to make greater contributions to mitigate climate change across the whole value chain.



**CATENA ALTA**  
MALBEC  
MENDOZA

CATENA ALTA Malbec is sourced from select rows in the Catena family's best vineyards: Angélica Sur (35%), Adrianna (20%), Nicasia (25%), Topica (10%) and La Pirámide (10%). The blend of these historic rows, like a marriage of sounds that create a symphony, yields an exuberant wine that speaks for the earth and the vines that have been tended by the Catenas for four generations. The Catena Family, since 1902: Argentina's Malbec Pioneer.

WINE: ESTATE GROWN AND BOTTLED BY BODEGA CATENA S.A. / PRODUCT OF ARGENTINA  
VINO: URBINO Bodega Nacional

**DISCLAIMER:** (1) ACCORDING TO THE SURGEON GENERAL, WOMEN SHOULD NOT DRINK ALCOHOLIC BEVERAGES DURING PREGNANCY BECAUSE OF THE RISK OF FETAL EFFECTS. (2) CONSUMPTION OF ALCOHOLIC BEVERAGES IMPAIRS YOUR ABILITY TO DRIVE A CAR OR OPERATE MACHINERY AND MAY CAUSE HEALTH PROBLEMS.

Alc. by Vol 14.0%      CONTAINS SULFITES

► Yanina Prieto from the Hospitality Team.





# OUR COMMUNITY

**W**e support our community with an array of programs to ensure that we all thrive as one. One of the biggest challenges we face today is that young students don't consider viticulture as a viable career option. They seek careers that will lead to job opportunities in the city of Mendoza or in other provinces. We work diligently to encourage local high school students to experience life and work in the vineyard based on an analysis of their abilities, skills, and interests. We offer a summer school program including sports and arts and crafts for children aged 5-15, whose parents are harvest workers. On average, 80 children per year participate in these programs, organised in collaboration with the municipality of Tupungato and other wineries, resulting in a 20 percent increase in women employed during the harvest.

Education and study are at the heart of Catena family's values and philosophy,

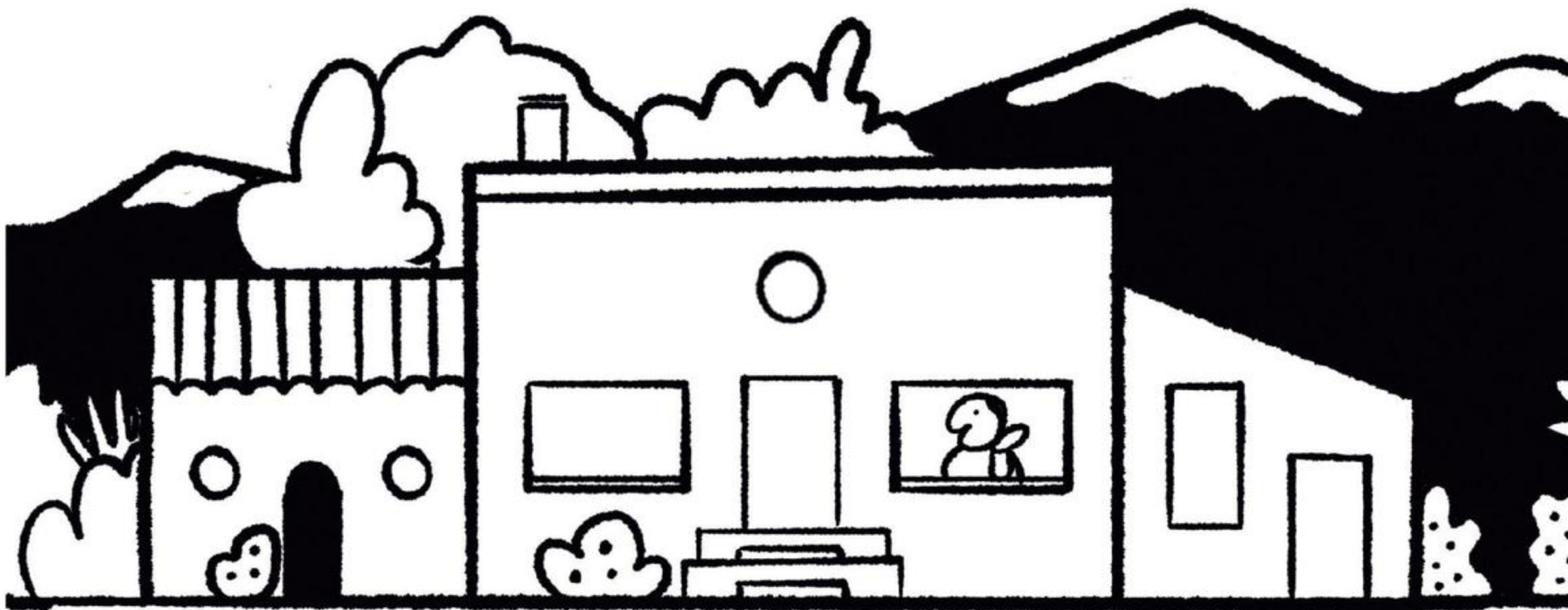
so continuing education is consistently encouraged among our staff. We want to ensure that those who work with us feel they can grow, both personally and professionally. Yanina Prieto has been working in the hospitality team at the winery since 2016. After high school, Yanina studied pharmacy but chose to remain at home and focus on her domestic life when she married at the age of 23. After her husband passed away unexpectedly, she was motivated by a friend to learn more about gastronomy and, through her own initiative, enrolled to study to become a sommelier. We only found out that Yanina had begun the program from a passing remark. Knowing this was a significant expense and valuing her own proactivity to learn more about her craft tied to her work at the winery, the family decided to cover inscription costs and supplies for her to complete her training. To us, these are the stories that make a difference – having a positive and lasting

impact on people, helping them fulfil their dreams and aspirations, and supporting them on this journey, is our definition of sustainability.

We provide housing for families that work on our vineyards and winery. These 137 homes usually have two or three bedrooms, a living room, a bathroom, and a kitchen for each family. Over the years, many of these families have stayed on after retirement, our retribution for a lifetime of hard work, love, and dedication to our family winemaking tradition. Each family is also offered a piece of land and the required water to maintain an orchard and animals. Juan Ibañez, who manages our vineyards in Gualtallary Alto describes his experience: “Alongside my wife and daughter, I’ve lived in the estate in Tupungato, Mendoza,

for the past five years. I take care of this estate, the small winery, and 15 hectares of Malbec, Chardonnay, Cabernet, and Torrontés alongside the animals: sheep, chickens, and horses. We’ve been happy and comfortable here, where we grow our own produce in a winter and summer orchard.”

The well-being of our staff is of critical importance. When the pandemic put the world on hold in March 2020, Laura Catena spun into action, calling upon her 25+ years of emergency medicine experience to implement strict social distancing and precautionary measures across the family winery in Mendoza and our offices in Buenos Aires. On March 3rd, safety taskforces were established in the vineyards and across our facilities. Following a situation analysis



of the country and critical international products and supplies, along with an assessment of the harvest status and stock and production needs, a “COVID Checklist” was established on March 9th to control the spread of disease. First actions included mandatory lockdown for all office personnel to work from home, work-travel was cancelled, international travellers were quarantined, and tourist activities at the winery were suspended – making Catena Zapata among the first to close doors to visitors, paving the way for wineries across the region to do the same.

Banners with detailed prevention guidelines were posted in all our workplaces. Both staff members and visitors were surveyed to identify people considered “high risk”, due to their age or pre-existing conditions. Resources were

made available to safeguard winemaking activities, including digital thermometers for temperature control at the entrance to vineyards and facilities, disposable masks for single use, reusable masks for staff, disposable gloves, safety glasses, alcoholic solution sprays, among so many others. At the height of the pandemic, over 5,000 cloth face masks were produced and distributed among team members and customers worldwide. We have a clinical doctor on staff: Dr. Luis Marcelino Magistochi, who conducts weekly visits to team members reporting medical problems that affect their work or otherwise. Dr. Magistochi has been working with us since 2010 and has established an ongoing relationship with the staff. He was essential in raising awareness on protective measures and providing information on vaccinations during the COVID-19 pandemic.





▶ Bottling crew hanging out after work.



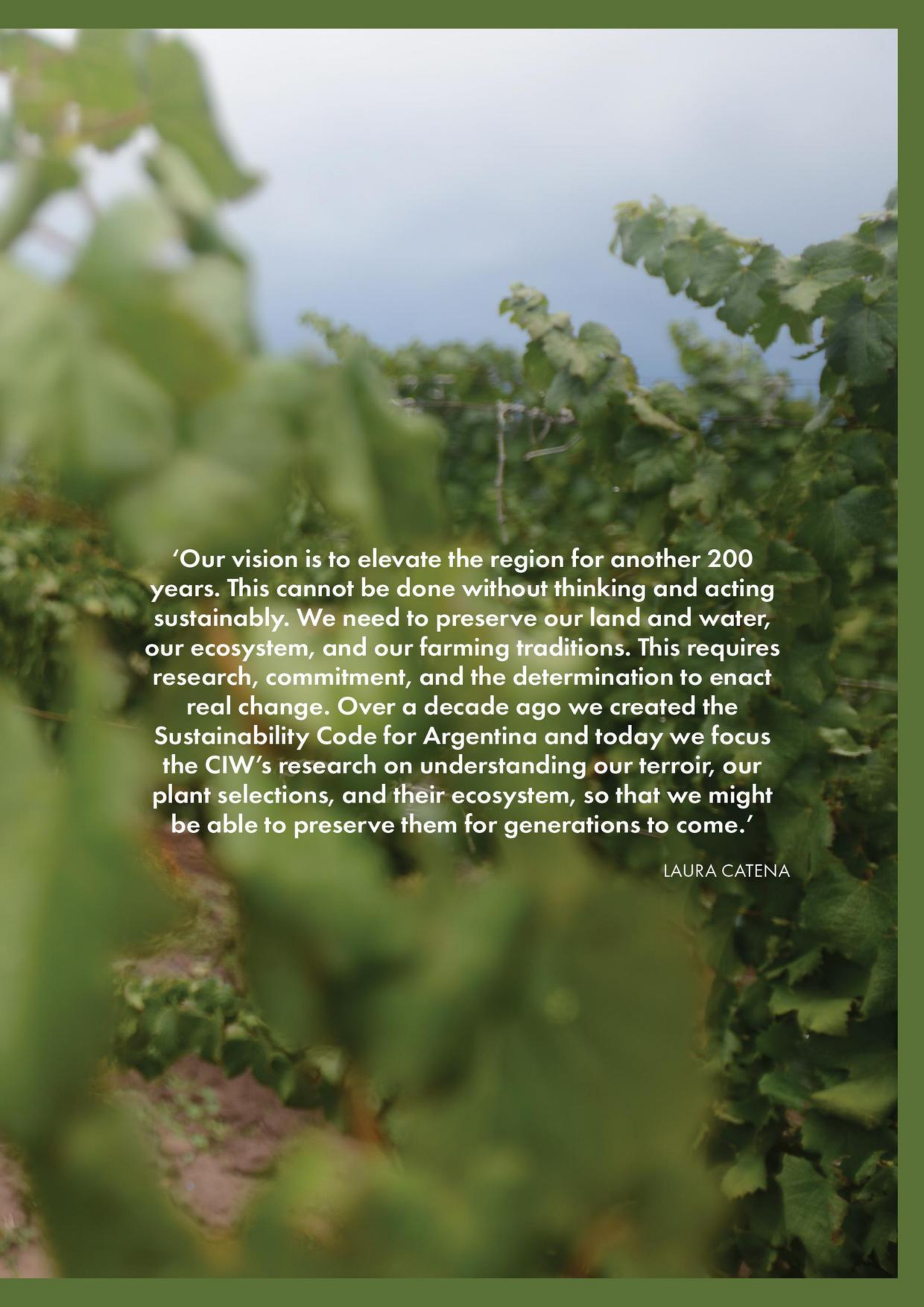
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OUR VISION  
**FORWARD**

PART IV







**'Our vision is to elevate the region for another 200 years. This cannot be done without thinking and acting sustainably. We need to preserve our land and water, our ecosystem, and our farming traditions. This requires research, commitment, and the determination to enact real change. Over a decade ago we created the Sustainability Code for Argentina and today we focus the CIW's research on understanding our terroir, our plant selections, and their ecosystem, so that we might be able to preserve them for generations to come.'**

LAURA CATENA



# QUALITY

Our focus remains on discovering new sites to make wines that can stand alongside the greatest in the world. We've developed a methodology that allows us to recover the lost value of Malbec and uncover the unique parcels of Adrianna vineyard. This same focus is set on regions beyond Mendoza (from Patagonia in the South to Salta in the North) and diverse varieties, both classic – Cabernet Sauvignon, Pinot Noir – and traditional to our land and region: Criolla Chica, Bonarda.

We're currently undertaking the assessment of Pinot Noir parcels in Mendoza as compared to Burgundy, within the frame of the Sepentrion project and together with scientists from the University of Burgundy. The initiative seeks to understand the impact of climate change on the quality of grapes and wines of this variety. Alongside scientists from CONICET (National Council on Scientific and Technical Research), we are spearheading a study in the characterization of Cabernet Sauvignon and Cabernet Franc parcels, with the aim of understanding its genetic plasticity: that is, how different clones behave at different altitudes.





# PRESERVATION

In the context of climate change, the need to understand the factors that might contribute to the extinction of a varietal or producing region has become increasingly urgent. The preservation and efficient use of water resources, and the prevention of plagues and widespread or devastating diseases are critical to the continuation of our labour cultivating the grape and producing wine. The introduction of new measuring techniques and predictive algorithms, together with the application of preventative methods, is key to the future of viticulture.

In the absence of local scientists with up-to-date expertise on the irrigation of the vine, we decided to create our own internal team with the support of references in the US, France, and Chile. The objective of the study is to optimize the quantity and frequency of watering and to minimize water use while maintaining quality and output or productivity. We've begun preliminary trials evaluating buried or underground irrigation, which we surmise will be compatible with organic viticulture, reducing the pressures of weed growth, just as it eliminates the loss of water through evaporation.





# REGENERATION

We are increasingly aware of the need not merely to preserve our ecosystem, but to contribute actively to its regeneration – paving the way for future generations to count on the same or more possibilities than today. In this respect, collaborative, international networks are essential to achieving high-impact commitments. Viticulture has the opportunity to influence not only producers, but also those who consume our wines, to take part in a virtuous, long-term process to improve the health of our planet and the quality of life of those who inhabit it. We are currently consulting with experts from different parts of the world to better understand how to sequester the highest amount of carbon in our vineyards, contributing to the total reduction of our carbon footprint.







► The sky from  $33^{\circ} 19' 40.0''\text{S}$ ,  
 $68^{\circ} 20' 20.4''\text{W}$ . La Vendimia,  
Mendoza, Argentina.



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 CatenaWines

 CatenaMalbec

 BodegaCatenaZapata

 CatenaMalbec

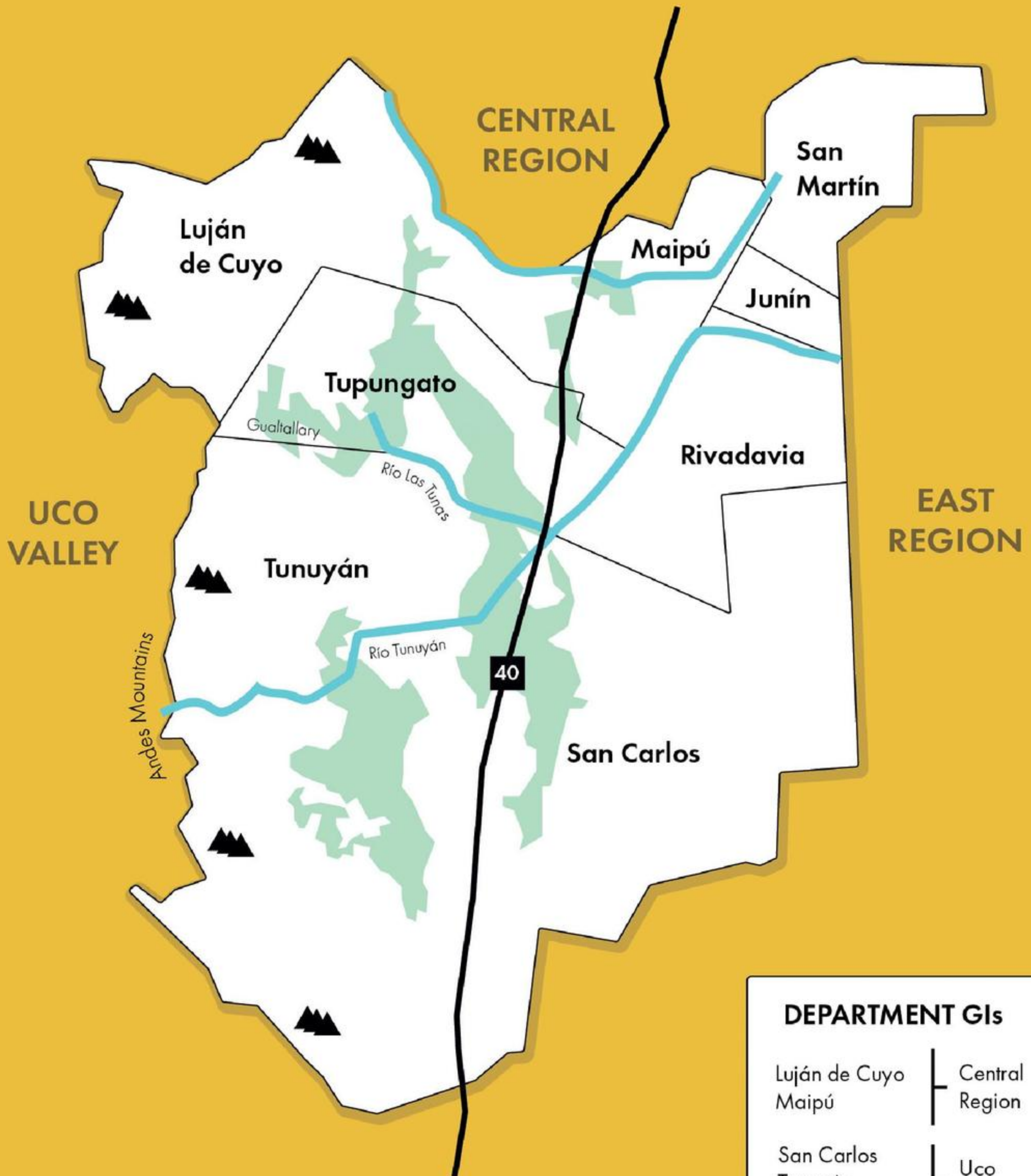
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# MAP OF ARGENTINA



# MENDOZA



DEPARTMENT GIS	
Luján de Cuyo	Central Region
Maipú	
San Carlos	Uco Valley
Tunuyán	
Tupungato	
San Martín	East Region
Junín	
Rivadavia	

