

The Future of Coffee in Cajamarca

Climate change has Peru's preeminent coffee-growing region braces for an uncertain future.

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PHOTOGRAPHY Michael Medoway (for Chameleon Cold-Brew)





Thirty-three-year-old Edilmer Rojas Suarez's coffee farm sits 1,360 meters above sea level in San Ignacio, Peru — one of 13 provinces that make up the Cajamarca region, a lush, mountainous area in Peru's northern highlands, where coffee farming is an important economic driver that supports the livelihoods of thousands.

In certain pockets of the world, climate, elevation and other factors align to form the perfect recipe for coffee production. Cajamarca is one of those places, a region where it seems specialty coffee is meant to be grown. With high altitudes, fertile soil, ideal temperatures and a historically semi-dry climate, coffee farms known for producing high-quality *Arabica* dot the hillsides, contributing to the region's status as Peru's leading exporter of premium coffee.

Although the land is fertile and dense with dedicated coffee producers, climate change has made farming in the region significantly more challenging in recent years. Irregular rains and warmer temperatures are now the norm, complicating the drying process and compromising the quality of the coffee. Leaf rust, known in the region as *la roya*, and problems with pests are also increasingly problematic as temperatures rise. On the other end of the spectrum, frosts are a concern too.

For smallholder farmers who invest so much in their coffee crop, a sudden rainstorm or a brush with *la roya* can have devastating consequences. When coffee crops are wiped out, so is a farmer's income. When quality goes down, so might a farmer's pay. Living in one of the poorest regions of Peru, these farmers rely on the income from coffee sales not only to sustain their farms, but also to feed their families, send their children to school, cover transportation costs and other expenses that fall far closer to needs than wants.

To understand what coffee farming brings to the local community, consider Jose Garcia Moreto, who started farming after buying a piece of land in the region. At first, he farmed cocoa in addition to coffee, and would sell his coffee in very small amounts. Once his farm matured and he became involved in Cenfrocafe, a well-regarded local cooperative, his farm has become profitable enough to allow him to do things like send his son to school and employ others in the community.

"I feel happy because when my friends come over I can give them work," Moreto said. "It's how we earn money. It's the way we make a living."

Coffee farming is always risky. Even in the best conditions, there's plenty of room for error. But as the climate changes and seasonal weather patterns become less consistent or altogether different, a farmer's ability to produce a quality product is even less of a guarantee. Suddenly, plenty of new variables are thrown into play and navigating them is far from straightforward.



THE DRY SEASON GETS WETTER

In years past, Cajamarca's coffee-harvesting season was mainly dry, allowing farmers to lay their coffee beans out to slowly and evenly dry under the hot sun for weeks at a time. But changing weather patterns mean rainstorms are now common during this drying season, and a sudden storm can have devastating effects. The point of drying is to allow the coffee to achieve a certain moisture content, which is closely tied to the coffee's quality. When drying coffee beans get wet, moisture content changes, quality is affected, flavor can be lost and cup defects are more likely.



But that's not all. Excessive rains during the harvest can cause the coffee cherries to take on too much water and eventually burst, or fall to the ground, which, again, can drastically reduce quality or even make the fruit unusable.

Suarez knows the effects of changing rain patterns all too well. "It has been nothing but rain during the harvest season," he said, adding that the climate and temperature have made it harder to dry coffee in a way that maintains quality. He is able to use a dryer that's owned by Cenfrocafe, but the dryer is shared among many members of the cooperative and therefore not always accessible.

He's still grateful that the dryer is available through Cenfrocafe, which helps its members produce the best possible organic and fair trade coffee by providing various mechanisms of support like technical assistance, loans, farm inputs, economic and leadership training, and professional development.

Like many in the region, Suarez's farm is a family affair. He tends the land on a parcel that originally belonged to his father, who is now in his eighties. Suarez finds joy in producing a quality product that provides income to support him and his family. "It's arduous work that has to be done, but we are getting it done,"





Suarez said. “We are doing what’s possible to reach expectations and better ourselves.”

But the weather worries him. Each harvest season seems to get wetter and wetter. “There is hardly a timeframe of continuous heat in regards to the drying process of the coffee,” Suarez said. He is optimistic that access to a mechanical dryer will allow him and his family to maintain the quality and taste of the coffee they produce. “That is what we are trying to accomplish as a family from here on out.”

San Ignacio coffee producer and agronomy student Jawin Robinson Garcia Guaman has felt the impact of changing weather patterns as well, particularly in the unpredictability of the seasons compared to years past. “Today the client asks us for quality in the cup of coffee, physical quality,” he says. “So, then with this, we can no longer achieve that. Why? Because the months of August and September are supposed to be summer. But now we have rain.”

That’s not the worst of it. Producing at lower altitudes, those somewhere around 1,000 meters above sea level or lower, is becoming less plausible due to the threat of droughts that can wipe out an entire crop. To continue farming, producers in these regions need to relocate to higher altitudes.

LA ROYA: A CONSTANT CONCERN

La roya is an ever-present concern for Arabica coffee producers not only in Cajamarca, but throughout the world. Once this dreaded fungus strikes, it spreads unsparingly from plant to plant, sometime’s wiping out a farm’s production entirely. Even when la roya doesn’t destroy all trees on a farm, it’s not uncommon for it to degrade the quality of the beans produced.

As one would assume, the impact on a producer is almost immediate. When the coffee disappears, so does the income it generates. The results are even worse for farmers who borrowed money at the start of the season to help finance things like food for their family. How is a farmer to buy new coffee plants to start over if all their income has been lost?

Previously, many coffee varieties were spared from la roya and other fungal problems because they were grown in mountainous regions at altitudes that were too cold for the fungus to live. There is nothing inherent in the plant that makes it impervious to la roya (like American root stock and phylloxera). But as global temperatures rise, those same varieties are susceptible to leaf rust. This includes catimor, a cultivar grown by many of the region’s farmers. Now, only the highest altitudes are safe.

Guaman didn’t have issues with la roya until sometime around 2012, but since then it’s been a problem. At one point the damage got so bad his family didn’t have a crop to sell for two years. They had to replant coffee trees and saw a significant loss in income

that added up to 20,000 soles, or \$6,000 in U.S. dollars.

On the whole, leaf rust hasn’t devastated Cajamarca as badly as many other countries and regions, but it’s still an issue, and no farmer is immune. Producers and farmer groups are doing their best to prevent future outbreaks by growing varieties like *Marsellesa*, *Paruinema* and *III* that combine rust-resistant properties with high quality and yield. There’s also a deliberate focus on reacting quickly when la roya is detected. For example, from the moment la roya’s spotted, Cenfrocafe works with farmers to keep it from spreading to other trees.

PEST CONTROL

Unseasonal rains, leaf rust and the stress of making enough money to support their land and families aren’t the only problems for these farmers — pests, such as the coffee borer beetle, are a concern too. Guaman said the borer beetle was particularly problematic in 2015, especially in the warmer lower altitudes. It degraded quality immensely on some farms, forcing those producers to sell their coffee at extremely low prices. In some situations, cooperatives wouldn’t even accept the coffee because the quality was too low, Guaman said.

He worked with Cenfrocafe at the time to help trap and reduce the number of coffee borer beetles with the help of sex attractants. “One week later these containers were full to the brim,” he said. “They were full of borer beetles.” The cooperative set out to continue trapping the borer beetles on other farms but ran into trouble when not all farmers participated. Still, they saw their efforts as a start, and the following year’s crop was much more successful. Cenfrocafe has continued to support farmers by helping them access ecological controllers when needed.

COFFEE SALES IN A CHANGING CLIMATE

Typically, cooperatives and farmer groups project how much coffee they will have available to sell at the end of the harvest, and coffee roasters book the coffee they want to buy months in advance. But the area’s irregular weather patterns make it difficult for a cooperative or farmer to project how much coffee they will have to sell. This leaves them vulnerable to potentially under-selling or over-selling their crop, says Kevin Sullivan, who leads North American sales at Falcon Coffees. Falcon is a sustainable-coffee-trading company that facilitates the exchange of coffee between farmers, cooperatives and exporters working within a producing region, and the roasters on the receiving end. It does a lot of work with Cenfrocafe and other farmers in Cajamarca, and it’s committed to supporting ethical and transparent supply chains.

Abnormal weather patterns also make it hard to anticipate supply and demand, and challenges producers to respond by constantly altering how they care for their farms. “This can negatively impact quality, and thus the price can be reduced,” Sullivan said.



A CLIMATE IN PERIL

Despite the challenges, many of Cajamarca's farmers continue to persevere and produce high-quality organic and fair trade coffee. In fact, this region is known for producing coffee for speciality roasters and recognizable corporations from Chameleon Cold Brew to Counter Culture and Pret a Manger.

Unfortunately, the outlook isn't as optimistic as these farmers. A study in Proceedings of the National Academy of Sciences says that, due to warming temperatures, by 2050, Latin America will see a 73 to 88 percent reduction in areas suitable for coffee growing.

And recent research from the World Agroforestry Centre (ICRAF) and the International Center for Tropical Agriculture (CIAT) project that all aspects of the coffee value chain in Peru's Northeastern coffee producing region, including Cajamarca, will be vulnerable to the effects of climate change.

Researchers estimate that production systems will need to change across more than 30 percent of the current producing areas of this region or farmers may no longer be able to grow coffee by 2030. Maintaining production levels in areas where the coffee tends to grow best — between 1,000 and 2,000 meters above sea level — will require resilience and adaptability, the report said.

Along with adaptability, researchers say success will depend on specific factors including farmers' access to seeds, information, technology and the implementation of agroforestry techniques.

SUSTAINABILITY AT THE FOREFRONT

When it comes to the livelihoods of these farmers, sustainability needs to be top of mind for all involved: from the producer, to the consumer, to the roaster, and everyone in between. Without a focus on sustainability, there may be no more coffee to sell, to buy, to drink, or to support a future for those dedicating their lives to growing it.

If there is hope, it is the formidable ingenuity of the farmer, and on the ground in Cajamarca, there is promising innovation. Since unseasonal rains pose some of these farmers' greatest challenges, implementation of improved drying systems is crucial.

Many local farmers have expressed the need for solar drying beds, which basically consist of a flat wooden platform where coffee beans can be laid to dry. An arch of plastic tarp hangs above to let the sun through, while protecting the coffee from the rainfall's damaging effects. Some producers already have these solar dryers, but they're expensive, costing hundreds of dollars each, and therefore unattainable for many others.

One of Cenfrocafe's biggest areas of focus right now is helping more farmers get access to these drying beds. They've prioritized them above other needs, knowing how important well-dried coffee

is to maintaining the region's reputation for high quality Arabica that scores well enough to be eligible for purchase by speciality roasters.

Though it's not entirely altruistic, some roasters are getting involved too, knowing the sustainability of the region's coffee production is closely tied to their own future. Chameleon Cold Brew, for example, is in the development phase of a project to fund a low-cost, high efficiency drying bed to distribute in partnership with Cenfrocafe, with which they work closely. This project came about after Chameleon leadership met with local Cenfrocafe-affiliated producers and was told that the farmers' biggest needs are assistance with the dryers and additional food security options. If farmers can no longer produce quality coffee, they may stop farming it altogether. For a company like Chameleon (which is owned by Nestle) a supply of quality, organic coffee is important.

"When producers can't produce coffee at a certain quality level, or their production is reduced due to environmental reasons, then there is less available coffee to buy for roasters," says Matt Swensen, Chameleon's director of coffee. "Taking it a step further, if producers aren't able to gain sufficient income from their harvest then they are at risk to switch crops to provide for their families."

In another step to help producers preserve their ability to produce speciality coffee amid environmental challenges, Chameleon and Cenfrocafe came together to fund a lab in Cajamarca that contains equipment that can be used to help farmers obtain feedback on the quality of the coffee they've produced. Information like processing and drying errors, cherry ripeness and maturity, and flavor notes are all detailed and reported early in the process, so if a farmer is making a simple mistake in the way they are drying their coffee, it gives them time to adjust. Without it, they would wait for feedback at the end of the harvest — previously the norm for the region but too late for any hope of adaptive correction.

Meanwhile, a nonprofit research and development organization called World Coffee Research has included Northern Peru in a large-scale research trial that spans thousands of farms across 23 countries. It's looking for coffee varieties that fare best in different parts of the world. Besides improving coffee quality and production, one of the driving goals here is to work toward more sustainable livelihoods for farmers through increasing their income.

It's not common for producers or cooperatives to do their own research at this scale, so the program has potential to significantly impact the lives of these farmers in a positive way. WCR thinks it's possible, noting that they've chosen this region specifically because of its high potential to increase farmers' coffee quality, yields and profits.

"If we can show a farmer that they can make a higher profit by using more sustainable practices, that would be an excellent out-





come,” says Danielle Knueppel, who is program director of the World Coffee Research’s Global Coffee Monitoring Program. “It is also important for the coffee industry to understand that if we want farmers to use sustainable practices that might cost them more to produce coffee, we will need to pay higher prices to the farmers. It’s the same concept as the organic food we buy in supermarkets. We pay higher prices because the cost of production is higher and we are choosing to support farmers that use sustainable practices.”

INCENTIVIZING YOUTH

Coffee farming in this region tends to be passed down from generation to generation, but not all young people want to stick around to work the land like those who came before them. In San Ignacio and other rural coffee growing regions, jobs and education can be hard to come by, and many youth gravitate toward the cities seeking greater opportunity.

But a recent project by Cenfrocafe has convinced increasing numbers of young people to stay involved in the region’s coffee industry by participating in unconventional roles. The project trains youth — 15 years old and up — in various aspects of coffee production, from quality assurance and quality control, to cooperative management, and the technical sides of agronomy. As of now, 120 youth are involved in the program, with new members joining each year.

This means that now, even youth who don’t want to pursue traditional field-based production roles have the chance to develop specialized skills that allow them to play important parts in sustaining and progressing their local coffee industry.

San Ignacio resident Juan Pablo is the son of a coffee producer and, through this program, is now training to be a Q grader, a high-level coffee industry certification awarded by the Coffee Quality Institute to individuals who can thoroughly assess coffee for several different factors like flavor, aroma, fragrance, body and acidity. Juan Pablo will work in the aforementioned quality lab, focusing on testing and sampling, in an effort to gain better feedback.

HOPE FOR THE FUTURE

With all these projects in the works and the continued dedication from the region’s smallholder farmers, there’s plenty of potential for the future of coffee in Cajamarca. But still, in a time of tremendous climate shifts and transformation, there really are no guarantees. Do global coffee prices need to rise to help farmers adapt to our changing environment and absorb some of the financial risk that accompanies their livelihoods? Possibly. Will farmers in Cajamarca still be producing coffee in the decades to come? Only time will tell. **W**