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Brazil Drought & Heat Wave Cause Global Concern

The drought currently affecting many of Brazil's main coffee-producing provinces continues to leave a blind spot for future harvest predictions, causing haywire market activity.

Drastically fluctuating weather conditions are common factors affecting production at all origins, so why is this particular drought causing such a mixed bag of harvest output predictions that appear to be only “best guestimates” and differ so widely between sources? Frosts are familiar obstacles to the trade, but Brazil's current drought situation involves many complicating factors previously unseen. Andre Santos, trader with Ally Brazilian Coffee Merchants, Plantation, Fla., said that people are unsure of how to best make predictions because the situation is so unprecedented.

“Usually, when it starts raining in between crops, farmers fertilize four times. But they can only apply fertilizations if it has been raining or there's moisture from irrigation. The first problem is that they can't apply fertilizer,” he said. “Farmers did only one fertilization instead of four because of the drought. When the rain did start in early March, agronomists said ‘go ahead and use your fertilizer, so you can try to get in all four fertilizations, with concern for the next crop.’”

In a March case study published by practiced biologist, plant pathologist, and agronomist Dr. Alemar Braga Rena, professor emeritus of Universidad Federal Viçosa in the state of Minas Gerais, Brazil, posited, “in the academic environment, the 2014 [Brazilian] summer is already considered as being the largest anomaly in Brazilian coffee production, only surpassed by the ‘Black Frost’ in 1975.” The weather anomaly is mostly being discussed as a drought, but the “heat wave” of sustained temperatures significantly above average is proving as problematic as the lack of water.

At a test farm site 750 meters above sea level in Zona da Mata of Minas Gerais, the average daytime temperature in January and February was 34° C (93° F), 4° C higher than the historical average for



those months. Elevated temperatures mean available water in the soil disappears faster, creating a doubly stressful environment. “The reservoir of soil water was quickly used up due to the strong evapotranspiration demand that was not replenished accordingly. Both the powerful electromagnetic radiation (from the sun) and the strong water stress broke all the natural defense mechanisms of the coffee tree, which is not a species evolutionarily adapted to an environment so aggressive,” explained Dr. Braga Rena in his report.

“As a result, there was almost a complete breakdown of the photosynthetic system, the only source of energy for the plant, exactly at the peak of water and carbohydrate demand—when the period of grain (coffee bean) formation was at its maximum. Growth, either of branches, leaves, or fruits, ceased completely. The fruits have not expanded enough, new productive nodes had not formed in adequate numbers, all of which, combined with the general weakening of the plant, mainly the root system, will dramatically affect the future crop of 2015/16.”

The Domino Effect

Perhaps the drama caused by the sum of “dominoing” events in Brazil's current weather anomaly will not be that the losses are in fact so huge, but more in the sus-

pense of not knowing what's coming next. When the nodes and roots permitting future growth form improperly, it is difficult to say what productive capacities those trees will have in the future. Researchers are performing diagnostics on farms by collecting samples of green coffee cherries off the trees and bisecting the fruits to observe bean development. It is not as simple as determining whether or not a given farm or region was affected by the uncharacteristic weather, but rather an interpretive process of assessing what percentage of each regions were affected and to what degree.

The drought is causing changes in available qualities of future coffee as well as total quantities. A higher ratio of underdeveloped to fully developed coffee cherries means “floaters” that cannot be washed and sold as fine Arabicas and are destined to become lower grade naturally processed coffees. Even though images of shriveled black beans scrolling across the screens of Brazilian newscasts create cause for alarm, there is certainly room for optimism. In spite of the severity and newness of the situation in Brazil, the team at Ally remains positive.

“After the 2011 spike in the market, producers invested in developing irrigation systems. For example, in the Bahia region to the North of Minas Gerais, gov-

ernment incentive programs and tax incentives encouraged new farmers to invest in coffee production, including irrigation systems,” said Santos.

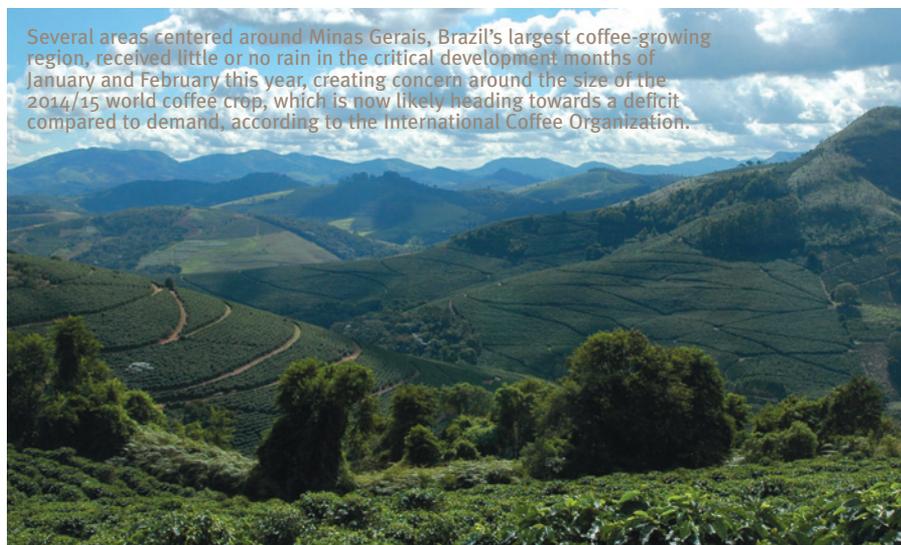
Investments in farm operations prove important safeguards against unanticipated weather. Irrigation, a component of coffee growing unseen—and logistically impossible—in most coffee growing nations, has allowed Brazilian farms adopting the infrastructure to attempt to stabilize production in face of the unpredictable weather that often plagues coffee growing nations and foster trees prepared to produce strong yields for many years.

“In the Cerrado region, which grows finer coffees, all the farms are irrigated. The trees looked good on my visit on January 9th,” said Ally trader Beto Taguchi. He reiterated his colleague’s opinion that the conditions surrounding the current situation are unique and should be treated as such. “Studies from the past cannot be applied to what’s going on at the moment. Now farms are producing above 50 bags per hectare, when

produce more yields in the same land area. The drought certainly put a dent in those increases, but it didn’t wipe out the farms. Taguchi speaks to the virtue of patience required when dealing with a perennial crop. “It’s like a frost, there’s nothing you can do but wait. It will take some time, but the trees will recover.”

One of the factors making the 2014 Brazilian drought such uncharted territory might be a good thing—information. In fact, perhaps there is more information than anyone knows what to do with. Advances in the range of farming techniques, data collection and information sharing give producers, governments, exporters and traders access to precise records like daily rainfall on a particular mountain and exact bean densities on certain farms.

Brazil is a massive country with expertise in agronomic coffee data; no region or farm needs to rely on an average extrapolated to their particular microclimate because they all have their own sources of statistics. The result is a volume of data that is maybe more



Several areas centered around Minas Gerais, Brazil’s largest coffee-growing region, received little or no rain in the critical development months of January and February this year, creating concern around the size of the 2014/15 world coffee crop, which is now likely heading towards a deficit compared to demand, according to the International Coffee Organization.

previously it was 20 bags per hectare.”

Santos noted that past production is one factor significantly softening the blow of the losses caused by the drought in the form of available reserves. “The USDA reports an expected carry stock of around 10 million bags, when it has been closer to 2 million in past.”

As a coffee-producing nation, Brazil has been honing its production skills to

cacophonous than choral.

This amount and depth of information can seem to make it even more difficult to figure out what comes next, but the number of discrete pieces of data permits statistics of grave damage to be shared alongside the indisputable numbers of those farms that were able to ride out the weather event partially—or totally—unscathed.—*Rachel Northrop*

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