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How Green Is Your Coffee?

More environmentally beneficial shade-grown coffee has actually declined as sales of supposedly sustainable coffee have risen

ClimateWire

Oct 1, 2014 | By [Jennifer Huizen](#) and [ClimateWire](#) |

While many products commonly found in the grocery aisles are just now receiving the environmentally friendly treatment, some are old-timers in the field. Consider the case of coffee.

U.S. distributors saw specialty coffee rise 75 percent in economic value from 2000 to 2008, and in 2012, it represented 37 percent of U.S. coffee sales by volume and a whopping 50 percent of the total economic value, bringing in roughly \$32 billion.

Specialty coffee now comes with an ever-increasing variety of certifications and labels confirming their supposed benefits for consumers and the environment, but despite these surface changes, has the product on shelves actually become more sustainable?

Shalene Jha, a conservation biologist with the University of Texas, said some of the salesmanship is overheated and so, unfortunately, are the claimed alterations to the global coffee production landscape as the climate changes.

"A lot of this growth has been focused on selling the concept of better quality versus better practice," she said. "There's huge variation in how coffee can be grown and according variation in how environmentally friendly the end product is."

Traditionally, coffee is grown in the shade of dense canopy, intermixed with anywhere from a few to a hundred species of trees and other crops like fruits and nitrogen-fixing legumes, but decades of global coffee price drops drove many producers to chop down overhead trees and clear the understory for denser planting.

When the conditions of production changed, so did the species farmers had to rely on, switching from the more flavorful, less acidic arabica most people would associate with the taste of coffee to robusta, which can grow in almost full-sun conditions.



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Jha said traditional coffee-growing practices should be favored because they bring in additional crops, offering continual soil nutrition and structure, and require far less use of fertilizers, pesticides and fungicides while cooling the surrounding area and filtering pollutants from water.

"Unfortunately," she said, "it turns out we're mostly doing the opposite of what's natural."

This spring, Jha, with researchers from five other institutions, used U.N. Food and Agriculture Organization data, as well as interviews with coffee authorities, private corporations and government agencies, to piece together a map of coffee production worldwide.

Newcomers choosing full sun

Despite an overall increase in the amount of land cultivated for coffee since 1996, shaded traditional coffee systems saw a reduction of almost 20 percentage points, previously representing 43 percent of that land area, and now covering 24 percent. While coffee production in Africa shrank, development in Asia was unprecedented, particularly in Vietnam.

"Coffee there is grown as intensively as rice, but at low elevations, meaning it's almost all robusta in full sun," said Robert Rice, a geographer with the Smithsonian Migratory Bird Center who helped Jha with her study.

Rice works with the Smithsonian's Bird Friendly coffee label, one of the few, if not the only one, on the market to take the shade conditions of traditional systems into consideration when certifying suppliers and producers.

Rice said that despite growth for products bearing the Bird Friendly label, demand is still not great enough to economically affect farmers, and even in some cases obscures the fact that many are already producing sustainable coffee.

"Each certification costs money, and the specific demand for each label is too low," he said. This is the case even though the Bird Friendly label saw average annual increases of 145 percent between 2000 and 2008, supported by 1,400 growers in nine countries that export their products to an additional 16 countries.

"Despite what people want, the way we grow coffee is fundamentally changing," he said. "And the truly sustainable market just hasn't caught up."

Birds and bees ... and storm protection

Jha became interested in coffee production after visiting a farm in the Andes.

"Walking through a forest filled with the sounds of birds and insects, looking up and seeing trees hundreds of meters overhead while these little coffee berries were looking you dead-on," she said, "coming from the monoculture systems of the United States, it really blew my mind."

Jha ventured to Mexico in 2005 to explore insect populations but changed her study to cover a wider range of bat and bee species found in these traditional-style coffee farms, important pollinators and biodiversity indicators.

She had heard that bird-watchers were seeking out the region's coffee farms for their supposed high counts of migratory and native birds. If true, she thought, there would be evidence of this in the farm's bee and bat populations, too.

Sampling regional farms, Jha not only found that animal populations were more diverse on these farms, but also, using DNA analysis,

found that native trees encroaching on the farms showed higher genetic diversity than their counterparts in surrounding larger forests.

"It made sense," said Jha. "Most species need movement to survive and so also areas on their travels to use as nesting grounds, foraging areas, hiding places. These tiny farms met all these needs and more."

Among all the aggression logging, agriculture and development that had largely fragmented tropical forests in the area, coffee farms, Jha realized, were serving as corridors, helping preserve biodiversity.

"If birds, bees and trees were prospering here, so must be their predators, negating pesticide use," she said, "and the soil must be richer and less reliant on fertilizers."

Jha also recognized another form of security that traditional coffee farms could offer under changing weather conditions.

The larger and more diverse the community of trees is, the more powerful is its root system, bracing the soil in times of floods and salvaging water in times of drought. After hurricanes ripped through the region, Jha and her team looked to see if different farms had weathered the storms in the same way. Using decades of data, they found that traditional farms had far less topsoil, infrastructure and produce loss. Most importantly, they also had far fewer landslides.

"My scale of thinking got even larger then," said Jha. "I decided, let's look at this globally now; surely we can use all this to our advantage in the face of a changing climate."

Coffee in the sun; consumers in the dark

Jha said shade farms far outlive their peers, existing in some places for hundreds of years, while monoculture sun farms exhaust their soil resources after mere decades. Comparing the two types of farming, then, is like comparing apples to oranges.

Rice said government regulation has also brought on some of the stark changes in coffee growing. Until the 2000s, he explained, coffee regulation was mostly left in the hands of nonprofit organizations and small groups, leaving officials blinded to the double benefits that shade-grown varieties offer.

When the U.S. Department of Agriculture did step in, it chose to focus on the term organic, which doesn't necessarily imply sustainable, traditional practices, particularly with a crop like coffee. That left consumers and producers on their own in determining the validity of the many labels and certification claims on their coffee can.

With closer inspection, explained Rice, hardly any products sold are sourced solely in accordance with the environmental or ethical claims on their labels.

"It's easy to see how consumers make choices out of line with their actual desires in light of all of this," said Rice. "You're asking people to dig pretty deep into a complex issue."

On the consumer side, Rice added, even people who are somewhat aware of the issues are still easily tricked. "Slap on a bird motif and a few green swirls, and you've convinced a majority of consumers the product they're buying is planet- and bird-friendly," he said.

While Rice sees these issues as roadblocks to a shade-grown resurgence, Jha said she views some of these challenges differently.

Much of the initial switch to sun-grown coffee production began in the 1970s and 1980s, when the more humid conditions of shade systems were thought to be linked to pervasive diseases such as the rust that is currently devastating Mexican harvests.

"This spawned massive deforestation of traditional farms, which were replaced by sun farms because authorities advised it," Jha said.

Jha and her team found shade-grown farms, when tested, showed similar resilience to rust to that of their sunny counterparts, because they decreased the wind necessary for rust spores to spread. Jha thinks looking into matters like this that seem small but have gone untested could help stop further transformation of coffee farming in the future.

She is hopeful that producers and consumers will discover that the old ways were the best. "Despite all these difficulties producers and consumers are presented, the matter remains limited by really only two factors, economics and education," she said. "Both can be altered."

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