

A STRONG start

WORLD COFFEE RESEARCH EXECUTIVE DIRECTOR TIM SCHILLING LOOKS AT THE ORGANISATION'S FIRST FIVE YEARS AND WHERE IT GOES FROM HERE.

ive years ago, when World Coffee Research was launched in March 2012, Executive Director Tim Schilling told Global Coffee Report that many coffee companies didn't really think about the agronomic conditions in which coffee was grown. With most companies sourcing their beans from traders, he said at the time, the separation between roasters and the source of the coffee made some companies reluctant to take part in research activities at the farmer level.

"In just five years, the conversation has totally changed," says Schilling. Since that time, World Coffee Research has recruited over 103 coffee companies to support and collaborate in its work, including major global commodities traders like Olam and ECOM, both of which are engaged in active collaborative research with WCR. Support is also coming from major coffee roasting companies in the US, Europe, and Asia—including Dunkin Donuts, Keurig Green Mountain, illycafe, Smuckers, Key Coffee and UCC—right on down to tiny micro-roasters.

World Coffee Research applies advanced agricultural science for coffee on a worldwide, collaborative basis, enabling the industry to invest in advanced agricultural research and development (R&D) to transform the sector and make coffee a vital source of global progress.

RESEARCH World Coffee Research



WCR is now developing the next generation of high yielding, resilient coffee varieties, while always aware of increasing quality where the consumer notices it – in the cup. The organization also conducts research to drive best agricultural practices, allowing farmers to maximise their incomes, while also seeking to minimise environmental impacts.

Using advances in agricultural science, WCR says, it is possible to dramatically improve coffee yields, quality, climate resilience and farmer livelihoods.

The challenges facing the coffee industry are manifold and diverse, from natural pests and diseases, through the vagaries of climate change to labour shortages and an aging farmer population as the younger generations leave smallholder farms in search of more reliable incomes unaffected by fluctuating prices at market and unpredictable harvests.

Add to these challenges the fact that the

world's two most populous countries, China and India, are just beginning to turn from their traditional beverage of tea to drinking more coffee, and the industry realised that innovation was needed to meet rising demand while safeguarding natural resources.

By 2050, WCR research shows, the world will require double the amount of coffee, while suitable land on which to grow the crop will decrease by up to half.

Coffee is considered an "orphan crop" - one for which the investment in R&D is precariously low given the global importance of the bean and the highly prized beverage it produces.

Ric Rhinehart, Executive Director of the Specialty Coffee Association, says coffee faces an existential crisis as the price for decades of neglect in fundamental research is coming due.

"Only the continued strong support of the coffee industry and its leading companies, large

and small, can set the stage for a viable coffee future," Rhinehart said.

It is here that WCR demonstrates one of its strengths, connecting 67 organisations – coffee research institutes, national coffee institutes, non-governmental organisations and private sector businesses – in 27 countries in its research agenda.

"Coffee has never before had a coordinated global strategy for research and development, or one driven by industry working together with countries. Historically, R&D was done by individual countries working in silos. The coffee industry created World Coffee Research in recognition that the old model isn't going to work to confront the big challenges facing coffee production, like climate change. Industry players have recognized that they are stronger together than apart," says Schilling.

WCR sees the success of the coffee plant as foundational to the success of the coffee supply chain, so primarily conducts research on the plant and the conditions that help it thrive. Using cutting edge knowledge of coffee genetics, it is creating new hybrids and varieties intended to be resistant to disease and pests, climate resilient, high producing, and high quality.

Uniquely for an agricultural research organization, WCR tests to make sure that new varieties, agronomic practices, and other tools will increase the growers' profits. "It doesn't do a farmer any good if you make a great plant that





costs them more money to grow than it gives them in return," Schilling says.

World Coffee Research works with countries, NGOs, and exporting companies to help expand access to the best varieties and protect coffee's genetic diversity.

Breeding programs are by their nature slow, and historically new varieties have spent 20 to 30 years in development before being released commercially. Therefore, widespread adoption of an improved variety can take upwards of 40 years. This timeline can be even longer for struggling smallholders who may be hesitant to take the risk on new varieties or farming methods.

The WCR breeding program has, in its first five years, created 66 F1 experimental hybrid crosses for evaluation but the organisation recognises that these will not be ready for commercial release until the year 2022, at the earliest. Thus, it has also put in place an aggressive strategy to boost the use of existing superior varieties and improved agronomic practices.

WCR has also evolved from its initial focus on increasing the supply and quality of Arabica coffee to include Robusta in its purview.

"It has become clear in just the last five years that climate change is going to threaten Arabica production in significant ways," Schilling says. "We are working hard to address those challenges. But it is prudent and wise to come at the problem from more than one angle. Robusta is easier for many farmers to grow, it generally much more resistant to one of the main threats for coffee farmers: coffee leaf rust.

"The real problem with Robusta is that it doesn't taste as good. Through breeding, we can try to change that. We believe it's pretty likely the flavour of Robusta can be substantially improved—it's just that no one has ever really tried to solve this before. They didn't need to. Climate change is changing the math."

WCR's global breeding program has hubs in Central America and East Africa, and 46 of its 60 F1 hybrid crosses are currently in field testing. (In plant propagation, an F1 is the first filial cross between two different parent plants, the "first children" of such a pairing.) It evaluates the candidate varieties for cup quality, smallholder resilience potential, drought and frost tolerance, disease resistance and yield.

It also has a global strategy for conserving and utilizing coffee germplasm, a valuable natural resource of plant diversity.

Last year, the organisation also launched the WCR Verified Program, to certify that seed producers and nurseries were producing healthy and genetically pure plants.

In 2016-2017, WCR reports, evaluated nurseries sold genetically verified plants to more than 10,000 farmers in Central America for the renovation of more than 5000 hectares with 20 million trees.

In addition to seeding the coffee seed sector, WCR has since its inception established the International Multilocation Variety Trial, which it describes as the world's largest coffee variety performance trial and seed exchange.

Thirty-five top performing varieties were provided by 11 countries and shipped to 24 participating countries as part of the exchange. This allows the organisation to study how specific varieties perform in different environments, and enable smarter breeding in future varieties.

The first major result of the trial occurred in February 2016, when it was discovered that a number of the F1 varieties were frost tolerant.

The Global Coffee Monitoring Program is yet another WCR initiative, which tests how combinations of varieties and climate-smart farm practices affect yield, quality and—most importantly—profitability. By 2023, the organisation plans to have 1200 on-farm trials in more than 20 countries, and to reach 60,000 growers by sharing the results with neighbouring farms.

The resulting big data set is envisioned to redefine farmer training protocols.

WCR also provides open access information for those involved in the global coffee value chain, making its publications available for free.

The latest of these was a major update to its Arabica Coffee Varieties catalogue, expanding it to include varieties from six new countries: Kenya, Malawi, Rwanda, Uganda, Zambia, and Zimbabwe. The catalogue previously only covered varieties commonly found in and around Central America.

The updated catalogue contains 53 varieties, with expanded histories for many of them.

Another popular publication is a Spanish-language technical manual on the management of coffee leaf rust, including climate-smart approaches rather than just relying on the application of fungicides.

More than 15,000 coffee producers and technicians have thus far downloaded the manual.

It has been a busy five years for WCR, as it works to protect coffee biodiversity, create resilient and high-quality varieties and boost the use of superior varieties and proven agricultural practices.

Looking ahead, the organisation expects to deepen agronomic research (for example, looking for new approaches to build soil health), build an advanced research program on coffee leaf rust, and expand its global breeding program to involve more countries and include Robusta for the first time. Doing this work will involve expanding the organisation's global footprint, hiring more research staff, and recruiting more partners from countries and the private sector.

"The industry created us in 2012, and I believe we have proven our worth," says Schilling. "Now, they are asking us to both deepen and expand our work. As we grow, we are going to continue to do everything we can to make sure that what we do results in tangible impact for the entire sector, but especially for coffee producers.

"If we do it right, the results could be transformational for coffee." GCR