



Raul Raudales sniffs arabica coffee beans as he and Richard Trubey (center) meet with Red Barn Coffee Roasters President Mark Verrochi to discuss the coffee drying process.

# ‘We Could Create Huge Changes’

*Brewing Coffee, Saving Forests, Bettering Lives*

By Geoffrey Douglas

For Raul Raudales and Richard Trubey, an engineer and a technical writer who met at UMass Lowell as students more than 20 years ago, world change begins with the modest coffee bean.



**T**heir story, like the story of the coffee they produce and the men and women who help to produce it, is a story in many parts: of innovation, technology, travel, teaching, research grants, and years and years of work. But it's as simple in its essence as that little bean at the heart of your morning cup.

It begins with a problem: throughout the countries of Central America, where much of the world's best coffee is produced, roughly 6,500 hectares—16,000 acres—of forest are cut each year to supply firewood for the drying of coffee beans.

"About three square centimeters," as Richard Trubey is fond of translating it, "for every cup we drink." It has been this way, he says, for at least a century.

So might there be a more efficient way? This was the question that Trubey '86 and Raudales, MS '93 began to consider together as students—and have been working on answering for most of the last 17 years.

Not long after they began, realizing they would need an entity through which to funnel their efforts, the pair created a non-profit, the Mesoamerican Development Institute, centered at UMass Lowell, to research new ways to dry the beans—and in the process, to create a more sustainable system. There were a lot experiments, and a lot of false starts.

"We were in the talking stage," concedes Trubey, "for quite a long while."

### THE WORLD'S FIRST SOLAR COFFEE

What they came up with, once the talking was done, was a hybrid dryer that converts discarded coffee bean-husks into fuel pellets; these in turn were burned with heat from solar panels to dry the beans just picked from trees. Then came the hard part: taking the new system to the source.

The first piece of funding came from Sandia National Laboratories in New Mexico. Since then, support has come from myriad sources: the Inter-American Foundation, the World Bank, U.S. Fish and Wildlife, the Humanist Institute for Development Cooperation, and—most recently—the National Science Foundation.



MDI's high-efficiency drying chamber in Costa Rica. MDI co-founder Raul Raudales is at left.

At this point, there is a dryer in place in a village in Honduras, where a cooperative of 150 farmers are sharing the coffee-production work. Once fully operational, there will no longer be a need to send the beans to remote locations—as far as 200 kilometers away in some cases, says Trubey—to dry in processing centers. The differences this makes can be measured on a lot of scales: better coffee, fewer trees lost, lower costs to the farmer.

"We could create huge changes," Trubey says.

The changes are happening on a second front as well. A five-member consortium of university partners—UMass Lowell, UMass Amherst and universities in Honduras, Costa Rica and Nicaragua—is enabling an exchange program of students and faculty, bringing the principles of sustainable development onto campuses on two continents.

Already, says Trubey, half a dozen engineering students and nearly as many faculty members have made the trip south, where they do their part in bringing the theories of solar energy come to life outside of the classroom.

Meanwhile, the product that results—Café Solar—is coming north: Roasted at Red Barn Coffee Roasters in Upton, it is now brewed and sold in UMass Lowell dining halls, the only coffee brand on the market, as far as anyone knows, produced using industrial solar dryers.

"This is a remarkable, incredibly rare opportunity," says UMass Lowell Professor Emeritus William Moeller, an environmental engineer who has been working with Trubey and Raudales for more than 10 years. "To be able to do all this, at the same time as you advance educational research and expand the prestige of the University—from an educator's point of view, that's about as good as it gets."

For Richard Trubey and his Mesoamerican Development Institute partners, it's barely the beginning:

"We want to create a model, and to keep it growing, until the big companies, the big coffee-makers out there, come around to adopting the process. That's the dream we're working toward." ■



MDI's new processing facility in Subirana, Yoro, Honduras. This will be the world's first coffee processing center to be powered entirely with renewable energy.

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