



Feed the Future Country Fact Sheet

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U.S. Farmer's Invention Reduces Food Waste in Developing Countries



Amanda Crump, UC Davis

Scientist Amrita Mukherjee checks the temperature of potatoes stored in a CoolBot-equipped room in Bangladesh during a demonstration.

In many developing countries, over half of all fruits and vegetables are never eaten. Instead, they are lost to damage or spoilage after harvest. The potential for these losses leads farmers to sell their fresh produce immediately at whatever price they can get, before they lose the crops that represent investments of labor, water and agricultural inputs. Improving how fruits and vegetables are handled after harvest can significantly prolong freshness—and cooling is key.

The most important aspect of postharvest handling is temperature, notes Michael Reid, postharvest specialist at the University of California, Davis, home of the Feed the Future Innovation Lab for Horticulture. “In the developing world in particular, affordable cooling technology is mostly absent,” he said.

Cooling can be an expensive challenge—even for American farmers.

A farmer in upstate New York, Ron Khosla, knew this problem all too well. His vegetable crop was spoiling too quickly, but he couldn't afford a walk-in cooler for his small farm. So he invented a solution: the CoolBot, a small electrical device that uses an air conditioner to produce cold air, turning a well-insulated room into a cold room for less than it costs to buy a refrigeration unit.

Then, one of his farming customers suggested he sell his device to other farmers, so he started a small business called Store It Cold, LLC.

The CoolBot caught the eye of postharvest researchers, including Reid, who works in developing countries with the Feed the Future Innovation Lab for Horticulture. He partnered with agricultural scientists from Uganda, Honduras and India to test the CoolBot in their climates, insulating each cold room with different local materials. The program has since tested CoolBots for

farmer cold storage in Tanzania, Zambia, Uganda, Thailand, Cambodia, Bangladesh, India and Honduras. Khosla still plays an important role in the global use of his invention—Reid has contacted Khosla to troubleshoot challenges and share results from new locations. In places without reliable electricity, Reid has tested options for solar power.

Horticulture Innovation Lab partner Jane Ambuko of the University of Nairobi has also worked with the CoolBot. She received a grant to pilot the device among Kenya's horticultural farmers for the Kenya Feed the Future Innovation Engine. "I see the CoolBot making a whole lot of difference," Ambuko said during a TEDxNairobi speech last year. But, she continued, it has to be cost-effective and affordable for smallholder farmers.

In many places, the most expensive part of a CoolBot-equipped cold room is the physical structure for the insulated room, but both Reid and Khosla see foam building materials becoming widely available and more affordable.

Khosla's small business has been growing—selling to not only farmers but also florists, micro-brewers and other artisanal food businesses. Now with six employees, the company has sold more than 27,500 CoolBots in 51 countries.

"I'm thrilled and so grateful to be a part of helping lots of people. Working with USAID and Feed the Future has gotten us known in other countries, and I'm looking forward to the day when we have enough in-roads in India and Africa where we can work directly with farmers there," Khosla said. "People didn't believe the CoolBots worked at first. But now we get the most amazing letters from people whose business has doubled or quadrupled. Good postharvest care makes such a difference."