

# HOW ONE FARMER'S INVENTION IS REDUCING FOOD WASTE

In many developing countries, more than half of all fruits and vegetables are never eaten, but instead are damaged or spoiled after harvest. These post-harvest losses can mean that farmers need 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 three most important aspects of postharvest handling are: temperature, temperature, temperature,” said Michael Reid, postharvest specialist with the Horticulture Innovation Lab. “In the developing world in particular, affordable cooling technology is mostly absent.”

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

As a farmer in upstate New York, Ron Khosla knew this problem too well and could not afford to buy a walk-in cooler for his small farm. So he invented a solution: an electrical device called a CoolBot that tricks an air conditioner into getting colder, turning a well-insulated room into a cold room for less than it costs to buy a refrigeration unit.

“I was hoping for a cheap, do-it-yourself solution that I could maintain, but mostly I just needed to keep my leafy greens and strawberries cold,” Khosla said. He later started a small business to sell the CoolBot called Store It Cold, LLC.

Khosla's CoolBot invention caught the eye of postharvest researchers, including Reid who in 2010 first partnered with agricultural scientists from Uganda, Honduras, and India to test this new device in their climates and with local materials.

Since that first project, the Horticulture Innovation Lab has tested CoolBots for cold storage in Tanzania, Zambia, Uganda, Thailand, Cambodia, Bangladesh, India and



Above, a CoolBot connects to an air conditioner to further lower the thermostat without freezing over so that a well-insulated room can cool fresh produce effectively.

At left, Amrita Mukherjee checks the temperature of potatoes stored in a CoolBot-equipped room in Bangladesh. (Horticulture Innovation Lab photos by Britta Hansen, above, and Amanda Crump, left)

Honduras. Reid has also tested options for solar-powered CoolBots.

One Horticulture Innovation Lab partner — Jane Ambuko of the University of Nairobi — received a grant to pilot this technology among 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. “But for it to make that desired difference we have to make it cost-effective and affordable for the smallholder farmers.”

In the wake of these successes, Feed the Future Partnering for Innovation also chose to invest in scaling up the CoolBot among

exporters and agricultural associations in Honduras.

And Khosla's small business has been growing. In early 2016, it had grown to employ six people and had 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 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. Once they try it, then they see.”



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