The Coolbot™ - Appropriate Cooling Technology

Temperature control is the most important factor in reducing postharvest losses

In much of the developing world, postharvest losses are as *high as 80%* and the cold-storage chain is virtually non-existent due to the high cost of equipment and spotty electricity. Because fresh produce can perish in a matter of days under ambient temperatures, temperature control alone can extend the shelf life by weeks or even months (Table 1).

- Quickly lowering produce temperature after harvest extends shelf life by reducing metabolic activity and microbial growth
- Market prices rise and fall drastically (Graph 1). Farmers who can store produce longer can take advantage of better prices.

The Coolbot™ provides inexpensive cold storage to developing-world farmers

The Coolbot™

1. was developed in the United States as an inexpensive way for smallscale producers to cool product on their farms
2. overrides the air conditioner's temperature gauge, tricking it into working harder
3. converts an insulated room and inexpensive, readily available window air conditioner into a coolroom
4. substantially reduces the cost of a cool storage environment for horticultural produce
5. makes cold storage a viable option for developing-world farmers, cooperatives and market groups

Basic Costs:

Coolbot ™	$299	Insulated Room	$200
Air Conditioner	$150	Electricity	$200*

*subject to variations

Benefits:

- Farmers can sell produce in the offseason when prices are higher
- Farmers are protected from erratic market prices
- Increasing cold storage possibilities will stabilize fruit and vegetable prices, enabling consumers to eat healthier all year

Next Steps:

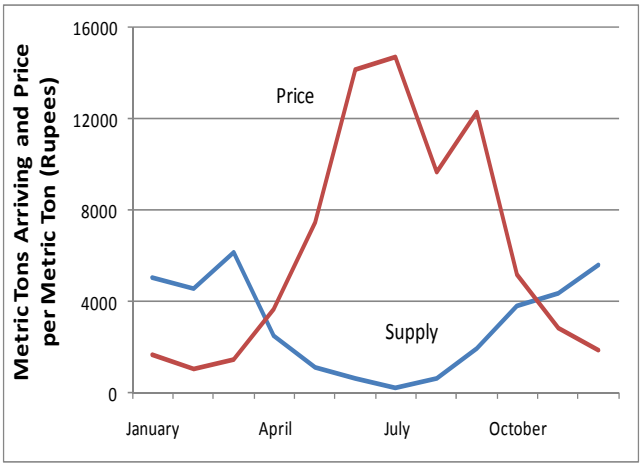
- Work with local groups to determine the cost-benefit of the Coolbot™ under various settings and the viability of using solar energy to power the system in regions that lack reliable electricity
- Identify conditions where the Coolbot™ will be most profitable

Table 1. Shelf life of horticultural products under optimum temperatures.

Product	Optimum Temp. (°C)	Shelf Life (Days)
Tomato	12.5	14
Mango	13	28
Banana	13	28
Bell Pepper	7.5	35
Cabbage	0	42
Potato	4	140
Lemon	13	180
Apple	0	245
Pungent Onion	0	260

--Adopted from the UC Davis Postharvest Technology Center's Produce Factsheets.

Graph 1. Volumes and Prices of Cauliflower in New Delhi



The Coolbot ™ is a small black box that is wired into a standard air conditioner.

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Resources:

UC Davis Postharvest Technology Center I Kader, A. (2006) The Return on Investment in Postharvest Technology for Assuring Quality and Safety of Horticultural Crops I Kader, A. (2002) Postharvest Technology of Horticultural Crops. Oakland: University of California, Division of Agriculture and Natural Resources Publication, 3311, P. 535. I

The Collbot™ is a product of Store-It-Cold - http://storeitcold.com/