

Cost/Benefit examples from CCARD Workshop (September 2002)

C/B exercises:

1. Form into small groups with respect to crop of interest
2. Select a postharvest technology of interest
3. Discuss costs of current practices versus cost of the new practice (ignore any costs that will remain the same, such as production, marketing, etc)
4. Discuss expected benefits, estimate a value for each benefit
5. Fill out worksheets, calculate relative costs and benefits
6. For longer term investments, calculate ROI (Return on investment, in terms of the time it takes to pay for the investment)

COST BENEFIT WORKSHEET

Assume harvest 1000 kg

	Current Practice	New Practice
Describe:		
COSTS		
Relative cost		
EXPECTED BENEFITS		
% losses		
Amount for sale		
Value/kg		
Total market value		
Value - costs		
Relative profit		

Results of C/B exercises in Ghana (Sept 2002)

Group 1: Pineapple

COST BENEFIT WORKSHEET

Assume harvest 1000 kg

	Current Practice	New Practice
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Group 2: papaya (Sunripe)

Group 3: Yams

COST BENEFIT WORKSHEET

Assume harvest 1000 kg

	Current Practice	New Practice
Describe:	No curing	Curing before packing
COSTS		
\$0.05/kg for curing		\$50
Relative cost		+\$50
EXPECTED BENEFITS		
% losses	10%	2%
Amount for sale	900 kg	980 kg
Value/kg	\$0.68/kg	\$0.80/kg
Total market value	\$612	\$784
Value - costs	\$612	\$734
Relative profit		+\$122

Group 4: Okra

COST BENEFIT WORKSHEET

Assume harvest 1000 kg

	Current Practice	New Practice
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Describe:

Group 5: Chillies

COST BENEFIT WORKSHEET

Assume harvest 1000 kg

MORE Cost and Benefit Examples

COMPARISON OF ESTIMATED COSTS AND EXPECTED BENEFITS OF USING PLASTIC CRATES TO HANDLE HORTICULTURAL PRODUCE

Costs:

Containers
Materials (liners, trays)
Trained labor
Crate cleaning and repair

Benefits:

Reduced losses due to less crushing and lower produce damage, water loss and weight loss
Higher value paid for higher quality packaged produce

Example: **Plastic reusable containers with disposable cardboard liners** are used for transport and display during direct marketing. You have reduced postharvest losses due to lower rate of compression damage (fewer failed packages) compared to typical losses of 10%. If you handle 1000 lbs of produce at an average value of \$0.95 per lb, you will have 50 additional lbs of produce to market if the crates reduce postharvest losses to 5%.

Costs:

Example:

Unsorted chili peppers packed in 50 lb sacks have a value of \$0.20/lb. At a given time, 1000 lbs are packed and marketed to commercial buyers, who must sort the peppers before resale to consumers or for food service use with average postharvest losses due to decay of 15%. Sorted produce will have additional marketing options.

Costs:

Example: Two tons of mangoes harvested at the peak of the season (June 15 to 20) are handled either at ambient temperatures (30 to 35 °C) or via an integrated cold chain (15 °C) where cooling costs are relatively high: \$1000 (\$0.25 / lb).

	Ambient temperature	Cold Chain
Postharvest losses	35%	10%
Quality classes:	20% highest 50% second 30% lowest	50% highest 30% second 20% lowest
Total volume sold	2600 lbs	3600 lbs
Marketing period	June 15-June 28	June 15 - August 1
Average price/lb	\$0.50	\$1.25
Sales - cost of cooling	\$1300	\$3500

COSTS AND BENEFITS OF USING ICE FOR COOLING DURING TRANSPORT TO MARKET.

Costs: Ice, Reduced amount of produce per load (all other expenses are assumed to be the same)

Benefits:

Reduced water loss

Reduced decay rates

Higher quality during marketing

Longer shelf life

	with ice	no cooling
1/2 ton pick-up load of mixed lettuces	750 lbs	1000 lbs
cartons @ \$2.50 each (20 lbs/carton)	38 cartons = \$95	50 cartons=\$125
ice (\$0.50/10 lbs) \$0.05/lb	250 lbs = \$12.50	0
water loss/decay rate	5%	10%
losses	(37.50 lbs)	(100 lbs)
Produce available to sell	712.5 lbs	900 lbs
Quality grades	highest (\$1.19/lb)	60%=(\$535)
	second (\$0.69/lb)	30%=(\$186)
	lowest (\$0.25/lb)	20% =(\$45)
	90% = \$742	
	10% = (\$49)	
	0%	

Market value	\$812	\$766
Costs containers	(\$95)	(\$125)
ice	(\$12.50)	0
Potential net sales per load	\$704.50	\$641

COSTS AND BENEFITS OF POSTHARVEST IPM PRACTICES

Costs:
materials
labor
power

Benefits:
reduced decay rates or insect losses
longer shelf life
improved quality

Harvest 1000 lbs of green beans, sort, cool and pack beans for marketing in California within one week. Postharvest IPM in this case involves a quick hot water dip (followed by an ice bath) to reduce disease problems during storage and marketing.

	Minimal pest controls	Postharvest IPM
labor for harvest (5 hours at \$7.50/hr)	\$35	\$35
labor for sorting/grading	\$12	\$12
hot water treatment (0.5 minutes at 52 °C)		\$10
ice bath		\$10
postharvest losses	20%	5 %
amount available to market	800 lbs	950 lbs
market value	\$0.50/lb \$400	\$0.79/lb \$750

COMPARISON OF ESTIMATED COSTS AND EXPECTED BENEFITS RELATED TO
TRADITIONAL PACKHOUSE OPERATIONS OR FIELD PACKING FRESH PRODUCE.

Costs:

Equipment (carts, mobile packing stations or wagons equipped with shade)

Trained Labor