COSTS AND BENEFITS OF CHANGES IN HORTICULTURAL PRACTICES

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Egyptian examples translated from Arabic by Dr. Awad Hussein, University of
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This manual provides many examples of the expected costs and benefits of making a wide
range of changes in horticultural production and postharvest handling practices. Examples
are taken from many cultures, economies and commodities, to give the reader an idea of
the potential of improving profits by adopting simple changes in their practices. Many of
these profits are possible with the very first use of a new practice, while others require a
short time period before the costs of investment are recovered and profits begin to accrue.

Several examples of calculating typical changes in costs and types of expectations for
benefits are described in Section 1 of the manual. These examples are provided to give
you an idea of the range of factors that should be considered when making changes in
postharvest practices. Most of these example use pounds (lbs) as the unit of measurement
and are expressed in $US since they were developed for farmers in the USA. Often a
simple change in harvesting practices, the use of an improved package or the use of a
cooling method will lead to important changes that will affect profits because there will be
better initial quality, less weight loss, lower rates of decay, and /or longer market life.

All of the worksheets included in Section 2 of this manual were developed during
horticultural development training sessions that I have implemented with extension
workers and farmers in developing countries around the world between 1999 and 2004. In
order to standardize expected results, each postharvest example begins with the assumption
that we were harvesting or handling 1000 kg of fresh product. If you are handling more or
less produce it is simple to make the adjustment by multiplying the outcome for 1000 kg
by the actual amount of produce you handle in a load or during a season. While the
country in which the training programs were held is sometimes identified (by the currency
used in the worksheet if nothing else), we have removed any references to the projects and
the dates during which these worksheets were developed. I have added notes and my own
comments to increase the practicality of using the worksheets, for example, by listing other
similar commodities for which the expected results might also be similar. We have also
converted the local currency to US dollars in each worksheet, for use as a general reference
for anyone unfamiliar with the local currencies used by the training participants.

Several blank worksheets are provided in Appendix A for the reader to use to do your own
calculations. Always try your new practice out on paper before you spend any money, and
you will be able to determine when and if it is a good time to make an investment in
postharvest practices. The market price of the commodity is often the deciding factor in
whether you will be able to make a profit, so pay close attention to the changes in market
price over the course of the season for the best chance for success.

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Section 1: Examples of calculations of costs and benefits.

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
Packages suited to field packing, cooling

Benefits:
No packinghouse to maintain
Less damage to produce (no dumping, resorting)
Quick handling (less water loss)

Example:
If 1000 lbs of table grapes are harvested and field packed by 4 trained workers (picked trimmed, packed 25 lbs per carton, and SO_2 pads inserted) in 2 hours. Losses are calculated to be 10% compared to the typical 20% losses associated with grading, trimming, packing and cooling grapes in a local packinghouse. Workers are paid $1.00 more per hour than usually paid to field laborers who harvest crops to be transported to the packinghouse.
Costs:
Base labor rate = $6.00/hour
Additional labor cost $1.00/hr bonus x 4 workers x 2 hours = $8.00/day
Equipment -- shaded packing station $150.00 (used for several seasons)
Materials -- same grape lugs and pads used in packinghouse = $ 1.50 per set, 4 additional cartons required.
Cooling -- same cost as for packinghouse

Benefits:
Packinghouse power, water and ventilation costs savings = $10 /day
Postharvest losses reduced to 10% (4 additional cartons per day from the vineyard).
100 lbs x 0.50 per lb = $50

	Field Packing	Packing Shed
Costs		
labor	$48	$40
packaging	54	48
shed		10
Total	92	98
Losses	10%	20%
Returns		
produce for sale	900 lbs	800 lbs
market value	$450	$400
Net profit	$358	$302

Field packing provides a daily return of $56 more than shed packing. The investment in the shaded packing station can be recovered in less than three days.

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:
$15.00 per crate; initial purchase of 40 crates = $600
Liners cost $0.25 each (40 used per 1000 lbs of produce packed 25 lbs/crate) = $10.00
Current cost of inexpensive fiberboard packages ($1.00 each) = $40.00
Labor cost $7.00 per hour; 2 hours to pack 40 crates = $14.00 (same for either packing container)
Total recurring costs for disposable liners = $10

Benefits:
50 lbs x $0.95 = $47.50 in additional produce marketed per load.
Savings of $40 per load in fiberboard cartons.
Total = $87.50

Return on investment:
Benefits - recurring costs = $87.50 - 10 = $77.50 profit per load.
The cost of $600 for plastic crates is recovered with the first 8 loads, after which you will have an additional profit of $77.50 per load. If you also have the benefit of improved quality due to the investment in improved packaging, profits will be even higher since the market value of the produce will increase.

COMPARISON OF ESTIMATED COSTS AND EXPECTED BENEFITS OF SORTING FOR THE DOMESTIC MARKET

Costs: Equipment, Labor, Packages

Benefits:
Reduced losses due to decay, less spread of infection
Improved overall quality, less damaged produce
Higher market price for highest graded produce

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:
Sorting table $50.00, usable over many seasons.
Labor $7/hour for sorting and packing 20 lb cartons of 3 quality grades
        (3 hours for 1000 lbs) = $21.00
48 Packages cost $1.50 each (= $72.00) vs 20 sacks which cost $0.50 each (= $10.00)
Total costs (unsorted) = $10 vs Total costs (sorted/packed) 50 + 21 + 72 = $123
(Total recurring costs for sorting/packing = $21 + $72 = $93)

Benefits:
Unsorted/unpacked market price = $10 /50 lb sack, 20 sacks. Total = $200.00
Sorted/packed market prices: highest grade = $ 0.45 /lb
                                medium grade = 0.20 /lb
                                lowest grade =   0.15 /lb

If 60% of the produce is of the highest grade (30 cartons) = $270
If 25% is medium grade (12 cartons) = $48
If the remainder are the lowest quality (6 cartons) = $12
Culls (not packed) = 4% (equivalent of 2 packages)
Total = $330

Expected profits from sorting/grading/packing: This example demonstrates an immediate recovery of invested capital. The first 1000 lbs of peppers sorted and packed pays for the capital outlay (the sorting table); after this, each 1000 lbs packed results in a return of an additional $47 ($330 - $93 in costs = $237) in comparison to peppers sold unsorted in sacks ($200- $10 = $190).

COMPARISON OF ESTIMATED COSTS AND EXPECTED BENEFITS RELATED TO COOLING HORTICULTURAL PRODUCE AND MAINTAINING THE COLD CHAIN DURING HANDLING, STORAGE, TRANSPORT AND MARKETING.

Costs:
Equipment
Power
Labor

Benefits:
Lower postharvest losses
Longer shelf life
Higher quality

Example: Two tons of mangoes (4000 lbs) harvested at the peak of the season (June 15 to 20) in India, and are handled either at ambient temperatures (30 to 35 ℃) or via an integrated cold chain (15 ℃) 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
Expected Sales	$1300	$4500
Sales - cost of cooling Relative profit	$1300	$3500 + $2200 per load of 4000 lbs

Note: Even though the cost of cooling is very high ($0.25 per lb), due to the extension of the marketing period into the time of year when prices for mangoes are much higher than during the peak of the season, the profits for cooling are significant (+ $0.55 per lb) when compared to using no cooling.

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
Costs			
1/2 ton pick-up load of mixed lettuces		750 lbs	1000 lbs
ice ($0.50/10 lbs) $0.05/lb		250 lbs = $12.50	0
water loss and loss due to decay		5%	10%
losses		(37.50 lbs)	(100 lbs)
Produce available to sell		712.5 lbs	900 lbs
Quality grades	highest ($1.19/lb)	90% =$742)	60%=($535)
	second ($0.69.lb)	10% =($49)	30%=($186)
	lowest ($0.25/lb)	0%	20% =($45)
Market value		$812	$766
Costs : ice		($12.50)	0
Potential net sales per load		$799.50	$766.00
Relative profits per load		+$33.50	

Notes: Even though the handler must spend money to purchase ice, and can handle less lettuce per load, there is a significant profit for using ice to cool the lettuce ($33.50 per 750 lb load).

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 pest mgmt treatment (2 hours at $7.50/hr)		$15
hot water treatment (0.5 minutes at 52 ºC)		$10
ice bath		$10
postharvest losses	20%	5 %
amount available to market	800 lbs	950 lbs
market value	$0.50/lb	$0.79/lb
	$400	$750
costs: pest control	0	($25)
Potential net sales	$400	$700
Relative profit		+ $300.00 per 1000 lbs

Section 2: Examples of Cost/Benefit Worksheets

PRODUCTION EXAMPLES

Irrigation methods in Egypt (2005)

COST BENEFIT WORKSHEET

Comparison of Two Practices

Irrigation method

Drip	Traditional flood	Describe
Three years life of equipment		COSTS
2000 LE / feddan	1200 LE/feddan	Relative cost
		EXPECTED BENEFITS
3%	20% of the field is taken up by the irrigation system	% LOSSES
2200 kg/feddan	1600 kg/feddan	Amount for sale
2 LE/kg	2 LE /kg	Value/Kg
4400 LE	3200 LE	Total market value
4400-2000 = 2400 LE	3200-1200 = 2000 LE	- Market value – relative cost =
+ 400 LE/feddan		Relative profit

Bonus: less disease with drip irrigation, less damage during harvest, higher density possible during planting.

Planting materials in Egypt (2005)

COST BENEFIT WORKSHEET

Comparison of Two Practices

Tomato seedlings

Buying nursery seedlings from improved varieties (hybrids)	Locally produced seeds and seedlings	Describe
		COSTS
1840 LE/feddan	250 LE/ feddan	seedlings
5000	5000	labor
6840	5250	Relative cost
		EXPECTED BENEFITS
60 tons/feddan	25 tons/feddan	YIELD
2 tons/feddan	2 tons/feddan	LOSSES
58 tons/feddan	23 tons/feddan	Amount for sale
0.50 LE/kg	0.50 LE kg	Value/Kg
29,000	11,500	Total market value
29,000-6840 = 22,160 LE	11,500 -5250 = 6,250	- Market value – relative cost =
+ 15, 910 LE per feddan		Relative profit

Notes

Similar results may be expected with any commodity for which improved seedlings are available.

POSTHARVEST EXAMPLES

Pineapple in Ghana (2002)
COST BENEFIT WORKSHEET

Assume harvest 1000 kg

	Current Practice	New Practice
Describe:	Harvest at M2 maturity stage No cooling Air ship	Harvest at M3 maturity stage Pre-cooling Air ship
COSTS		
Cooling fee $US 0.04/kg		$40
Relative cost		+ $40
EXPECTED BENEFITS		
% losses	15%	5%
Amount for sale	850 kg	950 kg
Value/kg	$0.40/kg	$0.45/kg
Total market value	$340	$427.50
Value - costs	$340	$387.50
Relative profit		+$47.50

Notes: When cooling makes it possible to harvest and handle more mature produce, the market prices are often higher because the quality is better upon delivery.

Papaya (Sunripe) in Ghana (2002)
COST BENEFIT WORKSHEET

Assume harvest 1000 kg

	Current Practice	New Practice
Describe:	Harvest M2 No cooling Air ship	Harvest M3 Pre-cool Air ship
COSTS		
$0.04/kg cooling service fee		$40
Relative cost		+$40
EXPECTED BENEFITS		Better quality, longer shelf life, more and bigger orders
% losses	15%	5%
Amount for sale	850 kg	950 kg
Value/kg	$0.80/kg	0.80/kg
Total market value	$680	$760
Value - costs	$680	$720
Relative profit		+$40

Note: Evan when market prices are not higher for cooled produce, the longer shelf life and lower postharvest losses will lead to improved profits.

Yams in Ghana (2002)

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

Note: Curing will also reduce losses for other underground crops, such as sweet potatoes, potatoes, taro and cassava.

Okra in Ghana (2002)
COST BENEFIT WORKSHEET

Assume harvest 1000 kg

	Current Practice	New Practice
Describe:	No cooling Air ship	Pre-cooling Air ship
COSTS		
$0.04/kg cooling service fee		$40
Relative cost		+$40
EXPECTED BENEFITS		
% losses	10%	2%
Amount for sale	900 kg	980 kg
Value/kg	$1.00/kg	$1.30/kg
Total market value	$900	$1,170
Value - costs		$1,130
Relative profit		+$230

Note: for highly perishable commodities such as okra, green beans, fresh peas, strawberries and leafy greens, cooling is often the best method for reducing losses and improving profits.

Chilies in Ghana (2002)
COST BENEFIT WORKSHEET
Assume harvest 1000 kg

	Current Practice	New Practice		
Describe:	No cooling Pack 5.5 kg/carton Air ship	Use USDA Porta-cooler from farm to airport (holds 170 cartons per load) Pack 5.1 kg/carton Air ship		
COSTS				
Porta-cooler construction costs (capital outlay)		US $1200		
Fuel (2 gallons to run for 4 hours)		17,600 cedis		
Relative cost		+ 17,600 cedis		
EXPECTED BENEFITS		Better quality, premium price, more orders		
% losses	10%	2%		
Amount for sale	900 kg	980 kg		
Value/kg	50p/kg	50p	60p	75p
Total market value		£490	£588	£735
Value – costs				
Relative profit		$48.90	$58.70	$73.40
ROI (how many loads to repay $1200?		25	20	16

Notes: Even spending what appears to be a high amount of money on cooling will often lead to bigger profits.

Bananas in Lebanon (2005)

COST BENEFIT WORKSHEET

Assume harvest 1000 kg (50 bunches)   Commodity: Bananas

	Current Practice	New Practice
Describe:	Handled in bunches, no packing	Pack hands into 12 kg cartons
COSTS		
83 cartons		$75
Labor for cutting, washing, packing		$30
Relative cost		+ $105
EXPECTED BENEFITS		
% losses	20% (5% weight loss, 9% wholesale trimming waste, 6% commission)	5% weight loss (no wholesale trimming or commissions)
Amount for sale	800 kg	950 kg
Value/kg	$0.58	$0.67
Total market value	$464	$636
Value - costs	$464	636-105= $531
Relative profit		+ $67.00

Notes: Often the costs for trimming and packing on the farm can be repaid immediately upon the sale of the commodity when there is more produce to sell (lower losses) of a higher market value.

Cucumbers in Lebanon (2005)
COST BENEFIT WORKSHEET

Assume harvest 1000 kg   Commodity: Cucumbers

	Current Practice	New Practice
Describe:	Handling without cooling	Pre-cooling
COSTS		
2 workers, 1 hour labor		LL 1250
electricity		LL 1500
Depreciation/ maintenance		LL 300
Relative cost		+ 3,150
EXPECTED BENEFITS		
% losses	7%	3%
Amount for sale	930 kg	970 kg
Value/kg	LL 500	LL 500
Total market value	LL 465,000	LL 485,000
Value - costs	LL 465,000	485,000-3,150= LL 481,850
Relative profit		+ LL 16,250

Notes: US $1.00 = LL 1500   Even when the market price is not higher for cooled produce, pre-cooling provides a return of + US$ 10.80 per 1000 kg handled because overall losses are reduced.

Green beans in Fayoum, Egypt (2005)

COST BENEFIT WORKSHEET

Comparison of Two Practices

Harvesting green beans

Trained, using clippers	Untrained laborers, hand-pulling beans	Describe
		COSTS
300	200 LE/ton	labor
300	200	Relative cost
		EXPECTED BENEFITS
5%	15%	% LOSSES
950 kg	850 kg	Amount for sale
1.2 LE	1 LE/kg	Value/Kg
1140	850 LE	Total market value
1140-300= 840	850-200= 650	Market value – relative cost =
+190 LE per ton		Relative profit

Notes

Double benefit—the laborers earn more money, growers earn more per ton because beans are more uniform, and there is less damage during harvest and less weight loss during handling.

COST BENEFIT WORKSHEET

Comparison of Two Practices

Tomatoes

Sorting	No sorting	Describe
		COSTS
20 LE		
20	0	Relative cost
		EXPECTED BENEFITS
10%	0%	% LOSSES
900	1000	Amount for sale
1 LE/kg	0.75 LE/ kg	Value/Kg
900	750	Total market value
900-20= 880 LE	750-0 = 750 LE	**-** Market value – relative cost =
+ 130 LE per ton		Relative profit

Notes

Even when sorting on the farm reduces the amount of produce available for sale, the market value will often be higher because less produce will need to be discarded by the buyers. Double benefit—the laborers earn more money, growers earn more per ton.

COST BENEFIT WORKSHEET

Comparison of Two Practices

Garlic

Harvesting when mature	Harvesting immature	Describe
		COSTS
0	0	Relative cost
		EXPECTED BENEFITS
10%	40%	% LOSSES
900	600	Amount for sale
0.35 LE/kg	0.30	Value/Kg
315 LE	180 LE	Total market value
315	180	- Market value – relative cost =
+ 135 LE per ton		Relative profit

Notes

Immature garlic, onions and other bulb crops are extremely sensitive to water loss and decay, which cause high postharvest losses. Bonus: mature garlic can be stored if it is not sold right away.

Green beans in Luxor, Egypt (2005)

COST BENEFIT WORKSHEET

Comparison of Two Practices

Harvesting green beans

Plastic crates	Sacks	Describe
Crates can be reused many times		COSTS
25 LE	20 LE	
25	20	Relative cost
		EXPECTED BENEFITS
5%	20%	% LOSSES
950 kg	800 kg	Amount for sale
1 LE/kg	0.75 LE/ kg	Value/Kg
950 LE	600	Total market value
925	580	- Market value – relative cost =
+325 LE per ton		Relative profit

Notes

Plastic crates can be stacked without causing damage to the produce, and also provide ventilation during transport, which helps prevent heat buildup in the load. They can be used successfully to reduce losses while handling many different crops.

Cantaloupe in Luxor, Egypt (2005)

COST BENEFIT WORKSHEET

Comparison of Two Practices

Cantaloupe

Harvest with trained crew	Untrained crew	Describe
		COSTS
75 LE/ton	40 LE	
75	40	Relative cost
		EXPECTED BENEFITS
2%	10%	% LOSSES
980 kg	900 kg	Amount for sale
1 LE/kg	1 LE/kg	Value/Kg
980	900	Total market value
905	860	- Market value – relative cost =
+ 45 LE/ton		Relative profit

Notes

Using trained workers can help reduce losses by decreasing damage and by making sure the melons and other commodities are properly mature at harvest. Even when prices are the same, reducing losses can improve profits.

COST BENEFIT WORKSHEET

Comparison of Two Practices

Cucumbers

Harvest into buckets	Traditional harvest (roughly handled)	Describe
		COSTS
100 LE/ton	10 LE/ton	
100	10	Relative cost
		EXPECTED BENEFITS
5%	20%	% LOSSES
950	800	Amount for sale
1 LE/kg	0.80 LE/kg	Value/Kg
950	640	Total market value
950-100 = 850 LE	640-10= 630 LE	- Market value – relative cost =
+ 220 LE per ton		Relative profit

Notes

Any time you can reduce damage to the crop during harvest or handling, there is a chance to make increased profits.

COST BENEFIT WORKSHEET

Comparison of Two Practices

Onions

Packing in Net sacks	Packing in Jute sacks	Describe
		COSTS
50 LE/ton	20 LE/ton	
50	20	Relative cost
		EXPECTED BENEFITS
5%	10%	% LOSSES
950	900	Amount for sale
0.70	0.50	Value/Kg
665 LE	450 LE	Total market value
665-50 = 615 LE	450-20 = 430 LE	- Market value – relative cost =
+ 185 LE per ton		Relative profit

Notes

Net sacks provide good ventilation so onions and garlic will have lower rates of decay and lower levels of postharvest losses.

Leeks in Indonesia (2001)
COST BENEFIT WORKSHEET

Commodity : Leeks   Assume harvest 1000 kg

	Current Practice	New Practice
Describe:	Transport with open truck	Transport with insulated refrigerated truck
COSTS	Rp.100,000	Rp. 500,000
Relative cost		Costs 5 times as much
EXPECTED BENEFITS		
% losses	20%	5%
Amount for sale	800 kg	950 kg
Value/kg	3000	3500
Total market value	2,400,000	3,325,000
Value - costs	2,400,000 – 100,000 =2,300,000	3,325,000 - 500,000 = 2,825,000
Relative profit		+ 525,000
ROI		

Note: 8000 Rupiah = $US 1, so the potential profits associated with transport by refrigerated truck are +$62.63 per 1000 kg load, even though it costs 5 times as much as open load transport.

Snake fruit (Salak) in Indonesia (2001)

COST BENEFIT WORKSHEET

Commodity : Salak fruit   Assume harvest 1000 kg

	Current Practice	New Practice
Describe:	Pack in wooden crates (50 kg fruit/box)	Use fiberboard cartons with liners and dividers (5 kg fruit/box)
COSTS		
containers	150,000	1,000,000
Labor for packing	10,000	40,000
Relative cost	160,000	1,040,000
EXPECTED BENEFITS		
% losses	15%	5%
Amount for sale	850 kg	950 kg
Value/kg	4500	6000
Total market value	3,825,000	5,700,000
Value - costs	3,825,000 – 160,000 = 3,665,000	5,700,000 – 1,040,000 = 4,660,000
Relative profit		+ 995,000
		$US 124 per 1000 kg load
ROI		

Notes: wooden crates cost Rp. 7500 each, cartons with liners and dividers cost Rp. 5000 each. (8000 Rupiah = $US 1). Using protective packages often pays off in an immediate reduction in postharvest losses and increased profits.

Papaya in Indonesia (2001)

COST BENEFIT WORKSHEET

Commodity: Papaya   Assume harvest 1000 kg

	Current Practice	New Practice
Describe:	No packing, bulk load	Packing in cartons (10 kg/carton)
COSTS		
Cartons (100)		Rp. 300,000
Labor		Rp. 50,000
Relative cost	0	Rp 350,000
EXPECTED BENEFITS		
% losses	15%	7%
Amount for sale	850 kg	930 kg
Value/kg	1500	2500
Total market value	1,275,000	2,325,000
Value - costs	1,275,000	2,325,000-350,000 = 1,975,000
Relative profit		+ 700,000
		($US 87.50 per 1000 kg load
ROI		

Note: 8000 Rupiah = $US 1. Using protective packages often pays off in an immediate reduction in postharvest losses and increased profits.

Oranges (Keprok) in Indonesia (2001)

COST BENEFIT WORKSHEET

Commodity: Oranges   Assume harvest 1000 kg

	Current Practice	New Practice
Describe:	No sorting, no grading	Sorting/grading into 2 sizes
COSTS		
labor		Rp. 105,000
Relative cost		Rp. 105,000
EXPECTED BENEFITS		
% losses		
Amount for sale	1000 kg	Big size 600 kg Small size 400 kg
Value/kg	2500/kg	Big size 5000/kg Small 2000/kg
Total market value	2,500,000	3,000,000 + 800,000 = 3,800,000
Value - costs	2,500,000	3,800,000 – 105,000 = 3,695,000
Relative profit		+ 1,295,000
		$US 162 per 1000 kg load.
ROI		

Note: 8000 Rupiah = $US 1
Sorting or grading to take advantage of improved market prices for certain sizes or maturities of produce is an easy way to increase profits.

COST BENEFIT WORKSHEET

Commodity _____ 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		
ROI		

COST BENEFIT WORKSHEET

Commodity _____ 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		
ROI		

COST BENEFIT WORKSHEET

Commodity _____ 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		
ROI		

COST BENEFIT WORKSHEET

Comparison of Two Practices

		Describe
		COSTS
		Relative cost
		EXPECTED BENEFITS
		% LOSSES
		Amount for sale
		Value/Kg
		Total market value
		- Market value – relative cost =
		Relative profit

Notes