

WORKSHEETS



PART II: COSTS AND BENEFITS of SMALL-SCALE PROCESSING

Comparison of estimated costs and expected benefits related to adopting postharvest technology for small-scale processing and marketing.

If you need more facts to fill out any worksheet, it is recommended that you select one specific commodity that you produce, and actually use the new processing practice on one row of vegetables or on a small group of trees for one season or any suitable period of time. During this time collect information on yields, losses, grades of produce harvested, costs of labor, materials and equipment for handling and processing, and power requirements or fuel costs for the new processing operation in comparison to your current practice. Some of your expenses will not be affected at all, while others will be added or no longer be necessary when you change practices.

INSTRUCTIONS

Make copies of these blank worksheets and use a complete set for each commodity you process and market. If you want to compare various postharvest technologies you may need to use several copies of the worksheets for each commodity.

Overhead costs should be reported by month, by season or by year, depending upon how you generally allocate costs of operation. The idea is to be able to determine how much of your overhead costs can be assigned to the commodity of interest. For example, if you produce, handle and process only one commodity, it will take on 100% of your overhead. If you process and market equal amounts of 3 commodities, each can be assigned 1/3 of the total overhead.

Most of the costs for the topics listed in Worksheet 6 will have several components including capital costs (equipment or facilities), and recurring costs (supplies, labor and purchased power or fuel for running equipment). If you purchase produce for processing from other growers, use the actual cost of produce, plus any costs associated with handling, processing, packaging and marketing processed product (from Worksheet 6) when completing Worksheet 8.

Worksheet 5: Collect some basic information

Commodity _____

Variety _____

1. Overhead Costs:

Salaries (managers, office staff, etc.)	Rs _____
Office expenses and supplies	Rs _____
Maintenance, parts and repairs	Rs _____
Utilities (gas, electric)	Rs _____
Communications (Telephone, FAX, e-mail)	Rs _____
Rent	Rs _____
Other	Rs _____
Total =	Rs _____

Overhead costs affiliated with this commodity
(base on percent of your total processed product)

_____ % Rs _____ *

2. General information related to each practice:

Base upon previous experience with the commodity, your CSAM results (see Appendix A) or estimates provided by other producers/shippers, buyers, published literature on postharvest technology, cost/benefit examples provided in each chapter of this workbook or information available from your local Extension Service. Many recommended PHTs will reduce losses by minimizing decay, mechanical damage, and weight loss during fresh handling, and optimizing product quality during processing.

Current Practice (describe) _____

New Practice (describe) _____

	Current practice	New practice
Expected yields	_____ kg	_____ kg
Estimated physical losses		
amount of culls during pre-sorting	_____ %	_____ %
losses due to pests	_____ %	_____ %
losses due to mechanical damage	_____ %	_____ %
weight loss during handling/storage	_____ %	_____ %
Sum of losses	_____ kg	_____ kg
Expected grades		
highest	_____ kg	_____ kg
second	_____ kg	_____ kg
lowest	_____ kg	_____ kg
How much fresh produce will you have available for processing? (lowest grade is usually not acceptable quality for processing)		
(Expected yields - Estimated sum of losses)	_____ kg	_____ kg
How much processed product will you have to sell?	_____ units	_____ units

3. Market Prices (obtain from your buyers or past history): Units may be by weight (lbs, kgs, etc.), by volume (pints, quarts, liters, etc.) or both.

Expected prices per unit (wholesale)

highest category Rs _____ / _____ (unit?)
 second category _____ Rs _____ / _____

Expected prices per unit (retail)

highest category _____ Rs _____ / _____
 second category _____ Rs _____ / _____

Worksheet 2: Comparison of Direct Costs

Does one practice cost more than the other for production, preparation for processing, postharvest handling (temporary storage or transport), materials, power, equipment for processing, marketing, etc.? Calculations should be based on expected yield, postharvest and processing losses, hourly labor costs, and expected volumes to be handled. Specific details for recommended practices are included in the examples found at the end of each chapter of the book, with those costs that are expected to change listed individually under each category. If you find there are additional costs associated with your operation, please add these to the list.

Current Practice _____

New Practice _____

	Current practice	New practice
Pre-Harvest		
seeds or planting materials	Rs _____	Rs _____
land preparation/planting	Rs _____	Rs _____
cultivation (pruning, thinning, mulching, etc)	Rs _____	Rs _____
preharvest treatments (pesticides, etc.)	Rs _____	Rs _____
irrigation	Rs _____	Rs _____

	Current practice	New practice
fertilization	Rs _____	Rs _____
other _____	Rs _____	Rs _____
Harvest and Market Preparation		
labor and equipment for harvesting	Rs _____	Rs _____
other _____	Rs _____	Rs _____
cost of any purchased produce	Rs _____	Rs _____
Packinghouse Operations		
pre-sorting	Rs _____	Rs _____
washing/cleaning	Rs _____	Rs _____
sizing/grading	Rs _____	Rs _____
sanitation	Rs _____	Rs _____
bulk packing	Rs _____	Rs _____
other _____	Rs _____	Rs _____
Temperature/RH Management		
pre-cooling	Rs _____	Rs _____
cooling	Rs _____	Rs _____
storage	Rs _____	Rs _____
other _____	Rs _____	Rs _____
Transportation		
vehicles	Rs _____	Rs _____
fuel	Rs _____	Rs _____
cooling	Rs _____	Rs _____
other _____	Rs _____	Rs _____

	Current practice	New practice
Processing		
ripening	Rs _____	Rs _____
sorting/grading	Rs _____	Rs _____
pre-treatments	Rs _____	Rs _____
processing equipment	Rs _____	Rs _____
materials/supplies for processing	Rs _____	Rs _____
labor	Rs _____	Rs _____
fuel/power costs	Rs _____	Rs _____
packaging	Rs _____	Rs _____
other _____	Rs _____	Rs _____
Other Costs		
marketing (fees, sales labor)	Rs _____	Rs _____
display	Rs _____	Rs _____
promotional activities	Rs _____	Rs _____
food safety program	Rs _____	Rs _____
other _____	Rs _____	Rs _____
Total Direct Costs	Rs _____	Rs _____
*Overhead Costs for this commodity	Rs _____	Rs _____
Total Costs	Rs _____	Rs _____
Total costs per unit of product for sale	Rs _____	Rs _____

Worksheet 7: Comparison of Benefits

Base upon expected yields and quality, amount of product available for sale in various prices categories, and expected prices per unit collected in Worksheet 5. (units of product at each price \times price/unit = expected sales at each price category). Do the calculations for either wholesale or retail prices or a combination if you will sell both ways.

Current Practice _____

New Practice _____

	Current practice	New practice
1. Expected sales (wholesale)		
highest category	Rs _____	Rs _____
second category	Rs _____	Rs _____
Subtotal Sales (wholesale)	Rs _____	Rs _____
2. Expected sales (retail)		
highest category	Rs _____	Rs _____
second category	Rs _____	Rs _____
Subtotal Sales (retail)	Rs _____	Rs _____
3. Total Expected Sales	Rs _____	Rs _____

4. Comparative Advantage

(Total Expected Sales - Total Costs = Comparative Advantage)

refer to the total costs calculated for each practice in Worksheet 6

Current practice Rs _____ - Rs _____ = Rs _____ (a)

New practice Rs _____ - Rs _____ = Rs _____ (b)

	Current practice	New practice
Which practice is most profitable, and can provide the best economic opportunity?	Rs _____ (a)	Rs _____ (b)

Worksheet 8: Recovery of Invested Capital (ROIC)

If the new processing technology costs more than your current practice, how long will it take to pay for your investment in the new practice? An excellent return on investment would be a recovery time of less than one month, while a slower return may require an entire season (3 to 5 months). Any longer recovery period usually would not be considered a good return on investment.

Current Practice _____

New Practice _____

1. Difference in total direct costs for new practice = Rs _____

(Actual capital outlay for new equipment and facilities, plus power costs, supplies and labor requirements when compared to costs for the current practice over the entire season: see Worksheet 6). If you purchase produce for processing, use your actual cost plus any handling, processing, packaging and marketing costs.

2. Interest rate (if capital is borrowed) = _____ % per annum; or _____ % per month

Cost of capital at three months = Rs _____

Cost of capital at six months = Rs _____

3. Difference in sales using the new practice = Rs _____ per month

(Subtract total expected sales using the current practice from total expected sales using the new practice: see Worksheet 7; divide the difference by number of months of sales)

4. Calculate ROIC in months to recover invested capital:

(Difference in total direct costs + any interest paid)

_____ = Months to pay for investment.

Difference in Sales per month

(Rs _____ + Rs _____)

_____ Months

Rs _____ per month