

Annex 1 - Example questionnaires for commodity system components

[Component 01 - Relative importance of crop](#)

[Component 02 - Public sector policies](#)

[Component 03 - Relevant institutions](#)

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Component 01 - Relative importance of crop

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Overall agriculture setting:

Total national land area: _____(sq mi, acres, ha)

Area suitable for agriculture: _____(sq mi, acres, ha)

Marginal land area:

Steepland _____

Deep peat _____

Acid sulphate _____

Marsh land _____

Salty soils _____

Others (specify)_____

2. Area (ha, acres) suitable for cultivation of crop group, e.g., fruit cultivation:_____

Area (ha, acres) suitable for specific crop cultivation, e.g., starfruit cultivation:

3. Common Name:

Scientific Name:

Commercial Clones:

1. _____

2. _____

3. _____

4. Total crop area planted and level of production for the past five years.

<u>Year</u>	<u>Hectares</u>	<u>Production</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5. Projected hectareage cultivated and expected level of production for the next five years (based on normal growth trend).

13. Summary of problems identified which may affect production, processing, postharvest handling or marketing of crop:

- 1.
- 2.
- 3.
- 4.

Component 02 - Public sector policies

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Policies and strategies: Identify and describe existing governmental policies and strategies which directly or indirectly affect the production and/or marketing of this product or groups of products.

Policies: _____

If yes, what are they: _____

5. Which policy or policies most strongly impact the crop production system, to what degree, and why?

6. Do any of the policies/strategies impact the postharvest losses?

Yes () no ()

Explain: _____

7. Summary of problems identified which may impact production, processing, postharvest handling or marketing of crop.

- 1.
- 2.
- 3.
- 4.
- 5.

Component 03 - Relevant institutions

6. Private sector institutions/organizations involved with crop:

<u>Name</u>	<u>Functions or actions</u>

7. Other ministries/departments directly or indirectly involved in the development of crop:

<u>Ministry/Department</u>	<u>Responsibility or functions</u>

8. Identify the coordinating body, if any, responsible for the development of the crop industry and describe its function: Name of coordinating body: _____

Functions

- a. _____
- b. _____
- c. _____

9. Indicate level of coordination of the various institutional activities:

	<u>Well coordinated</u>	<u>Satisfactory</u>	<u>Poorly coordinated</u>
Planning	()	()	()
Production	()	()	()
Processing	()	()	()
Marketing	()	()	()
Research	()	()	()

10. Summary of key public and private sector institutions for the development of the crop industry:

<u>Name of institution, unit, department, or organization</u>	<u>Principal constraints</u>

Component 04 - Facilitating services

NAME OF DATA COLLECTOR: _____ TEL: _____

TITLE: _____ INSTITUTION: _____

1. Transportation:

a. Farm accessibility (road conditions)

()good ()acceptable ()poor

Observations: _____

b. Availability of vehicles for:

	<u>Good</u>	<u>Acceptable</u>	<u>Poor</u>
- Production inputs	()	()	()
- Farm to packinghouse	()	()	()
- Farm to market	()	()	()
- Packinghouse to wholesaler	()	()	()
- Packinghouse to port	()	()	()
- Export: air shipments	()	()	()
- Export: sea shipments	()	()	()

c. Describe priority constraints affecting transportation:

1. _____

2. _____

2. Information (info):

	<u>Production</u>		<u>Postharvest</u>		<u>Markets</u>		<u>Prices</u>	
	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>
Institutional info available?	()	()	()	()	()	()	()	()
Sufficient for decision making?	()	()	()	()	()	()	()	()
Sources of institutional info?	_____	_____	_____	_____	_____	_____	_____	_____
Other sources of information?	_____	_____	_____	_____	_____	_____	_____	_____

Describe priority constraints related to information:

3. Credit:

<u>Sources</u>	<u>Type of collateral required</u>	<u>Interest rate</u>	<u>Limits of credit</u>	<u>Sufficient</u>	
				<u>Yes</u>	<u>No</u>
_____	_____	_____	_____	()	()

_____ () ()
 _____ () ()

Describe constraints with respect to credit:

- a. _____
 b. _____

4. Farm inputs:

<u>Types of farm input</u>	<u>Available when needed</u>		<u>Principal source of input</u>
	<u>Yes</u>	<u>No</u>	
- fertilizers	()	()	_____
- chemicals	()	()	_____
- tools	()	()	_____
- irrigation equipment	()	()	_____
- natural pesticides	()	()	_____
- others _____	()	()	_____

Describe constraints related to supply of farm inputs:

- a. _____
 b. _____

5. Technical assistance (TA):

<u>Operation</u>	<u>TA is available</u>		<u>Source of TA</u>	<u>TA is sufficient</u>	
	<u>Yes</u>	<u>No</u>		<u>Yes</u>	<u>No</u>
Production	()	()	_____	()	()
Postharvest	()	()	_____	()	()
Marketing	()	()	_____	()	()
Processing	()	()	_____	()	()

Describe constraints with respect to technical assistance:

- a. _____
 b. _____

6. Postharvest facilities:

	<u>Owner/Operator</u>	<u>Is capacity sufficient?</u>		<u>Is service efficient?</u>	
		<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>
Cold room	_____	()	()	()	()
Packinghouse	_____	()	()	()	()
Refrigerated truck	_____	()	()	()	()
Others (specify) _____	_____	()	()	()	()

7. Describe constraints with respect to postharvest facilities:

a. _____

b. _____

8. Identify and describe any other existing or needed services or infrastructure relevant to the production, processing, postharvest handling, or marketing of the crop in question:

Component 05 - Farmer organizations

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Identify the active farmer organizations involved with the production or marketing of the crop. For each organization identified, provide the following information:

a. Name of organization: _____

b. Name of key person: _____

c. Location, address: _____

d. Number of active members: _____

e. Types of commodities handled: _____

f. Services offered to members, e.g., information, technical assistance, credit, transport, storage, grading of produce, farm input, supply, marketing, etc.:

g. Important experiences of the organization in production, postharvest handling, processing or marketing:

h. Quantify the organization's resources (human resources, financial resources, vehicles, equipment, buildings, etc.)

i. The management/administration of this organization is considered:
very good(), good(), satisfactory(), poor(), very poor().

j. Does this farmer organization have full time management?
yes () no ()

k. Does this farmer organization have an established financial accounting system?
yes () no ()

4. If there are no farmer organizations dealing with the commodity, explain why not:

Recommendations with respect to farmer organizations:

5. Summarize the principal problems affecting the development of farmer organizations.

- 1.
- 2.

Component 06 - Environmental requirements and constraints

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Optimum growing conditions for crop:

1.1 Soil:

a. type: _____

b. pH: _____

c. slope: _____

1.2 Monthly water requirements: _____

1.3 Temperature range within which crop does well: _____

1.4 Humidity range within which crop does well: _____

1.5 Photo-period (length of daylight required): _____

1.6 Other: _____

2. Crop sensitivity to weather conditions:

	<u>Sensitive</u>	<u>Moderate</u>	<u>Tolerant</u>	<u>Remarks</u>
- drought	()	()	()	_____
- heavy rain	()	()	()	_____
- water logging	()	()	()	_____
- strong winds	()	()	()	_____
- high temperatures	()	()	()	_____
- low temperatures	()	()	()	_____

3. Optimum storage conditions:

	<u>Shelflife (days)</u>	
	<u>Minimum</u>	<u>Maximum</u>
- ambient temperature	_____	_____
- cool storage (@ _____ °C)	_____	_____

4. Quality of soils in the production area in question are considered:

very good (), adequate(), or deficient().

5. Typical soil conditions in production area:

Soil:

a. type: _____

b. pH: _____

c. slope: _____

6. Rainfall (mm) in the production area during the growing season:

Minimum _____ Maximum _____ Average _____

7. Rainfall is considered excessive(), adequate(), or insufficient().

Explain: _____

8. Are rains torrential to the degree of damaging the crop? yes() no()

9. Does the crop suffer from water logging (excessive amounts of standing water) at any time during the growing season? yes() no()

Explain: _____

10. Does the area suffer from flooding during the growing season? yes() no()

Explain: _____

11. In case of drought conditions, is irrigation available? yes() no()

Explain: _____

12. What is the temperature of the area during the growing season?

minimum _____ maximum _____ average _____

13. Is frost or cold temperature a constraint in this area? yes() no()

Explain: _____

14. Are high temperatures a problem for this crop in this area? yes() no()

Explain: _____

15. What is the average relative humidity of the area during the growing season? _____
%

Is there a significant daily variation? yes() no()

Explain: _____

16. What is the slope of most of the land in the growing area?

very flat(), gently sloping(), moderately sloping(), steep(), very steep(), rolling(),
mixed flat and sloping().

17. How do the above ecological conditions generally affect crop production and/or yields?

18. Summarize problems which may impact production and/or postharvest handling:

1.

2.

Component 07 - Availability of seeds and planting materials

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Commercial seeds available:

	<u>Name</u>	<u>Source</u>
1.		

14. If obtained from the public sector, are they subsidized? yes() no()
Explain:_____

15. Age of plants when moved from nursery to field?_____

16. Are they seedlings()? or grafted()? If grafted, are they trained? yes() no()

17. Grafting success rate high(), medium(), low().

18. Are plants certified disease free()? appear to be disease free()? or do they appear diseased()?

19. Are plants available in sufficient quantity to meet demand? yes() no()
Explain:_____

20. Is credit available to the farmers to allow purchase of seeds or plant stock?

21. Are seeds or plant stocks generally available at the proper time of year?

22. Based on available seeds or planting material, are productivity and quality expected to be high(), medium(), or low()?

23 Summary of problems identified which may affect the production, processing, or postharvest life of product.

- 1.
- 2.
- 3.

24. Other Observations:_____

Component 08 - Farmers' cultural practices

NAME OF DATA COLLECTOR: _____ TEL: _____

TITLE: _____ INSTITUTION: _____

1. Why does the farmer grow this crop?

no other alternative, tradition, best money-making alternative,
 other (specify) _____

2. Most common type of farming system:

mono crop intercrop rotation backyard garden
 slash and burn plantation
 other (specify) _____

3. How is the ground prepared for planting?

plowed by tractor plowed with animals worked by hand
Describe: _____

4. Planting hole size and method of preparation: _____

5. Describe type of planting material used: _____

6. Describe planting distance and pattern used: _____

7. Do farmers carry out a plant protection spray program for pests and disease?
yes() no(). If yes, describe methods: _____

8. Do farmers fertilize the crop? yes() no(). If yes, describe method, formula, frequency,
and quantity used: _____

9. Do farmers use irrigation? yes() no(). If yes, describe the method and frequency: _____

10. What is the principal source of labor?

family, exchange of labor with neighbors, hired full-time, hired part-time,
 other (specify) _____

11. Is the supply of labor a problem during production? yes() no().

During harvest? yes() no(). Explain _____

12. Laborers are: highly skilled, satisfactory, poorly skilled.

13. Are attempts made to control shade? yes() no(). Describe method/frequency of
control.

14. Do farmers prune this crop? yes() no()

If yes, how? _____

15. Describe method, frequency, and adequacy of weed control. _____

16. How do farmers make the decision when to harvest the crop?

Maturity Market price danger from theft

Other (specify) _____

17. How is crop harvested? Mechanically, Manual labor, Family labor,

Other (specify) _____

18 What tools are used during harvest? _____

19. What is the average area (hectares, acres) planted by typical farmers?

_____ minimum _____ maximum

20. Does the farmer grow the crop on land that is owned, rented, share-cropped,

communally farmed, other? _____

21. What changes in cultural practices might contribute most to an improvement in product quality?

22. What changes in cultural practices might contribute most to an increase in production?

23. What changes in cultural practices might contribute most to a decrease in per unit production costs?

24. Summarize the cultural practices which are likely to impact production, processing, postharvest handling, or marketing of product.

1.

2.

Component 09 - Pests and diseases

NAME OF DATA COLLECTOR: _____ TEL: _____
 TITLE: _____ INSTITUTION: _____

List all pests and diseases which impact upon the productivity or quality of the crop by order of importance. In each case, indicate economic or quarantine significance.

<u>Name of pest</u>	<u>Significance (Econ or Quar)</u>	<u>Name of disease</u>	<u>Significance (Econ or Quar)</u>
1. _____	_____	1. _____	_____
2. _____	_____	2. _____	_____
3. _____	_____	3. _____	_____
4. _____	_____	4. _____	_____

For each pest or disease listed above, complete the following questionnaire.

1. The following information pertains to a pest(), or disease() or economic(), or quarantine() significance.

2. Common name: _____

3. Scientific name: _____

4. The damage done by this pest or disease affects the following:

	<u>Yes</u>	<u>No</u>	<u>Describe negative impact</u>
- Quantity available for market	()	()	_____
- Quality of product	()	()	_____
- Price of product	()	()	_____
- Consumer demand	()	()	_____
- Other _____	()	()	_____

5. Technologies are available to prevent(), eradicate(), or control(), the pest and/or disease, or are not available().

6. Costs of control are economically feasible(), or not economically feasible().

7. In the case of export crops, in which foreign market(s) is this pest or disease of QUARANTINE significance? _____

8. What preharvest control methods are presently used for this pest or disease? _____

9. What postharvest control methods are presently used for this pest or disease? _____

10. What alternatives exist to control this pest or disease?

Preharvest: _____

Postharvest: _____

11. Does chemical treatment produce a residue hazard? yes() no(). If yes, explain:

12. Does chemical treatment affect other organisms beneficial to the yield and quality of the crop?

13. How do the farmers decide to spray for the pest or disease in question? (Does the farmer apply chemicals at the first sign of insects or disease or only after the crop is severely infested?)

14. Type of pesticide most commonly used? _____

15. With what frequency do farmers spray? _____

16. Who does the spraying (farmer, worker, co-operative, Ministry of Agriculture, other)?

17. Does the farmer consciously attempt to minimize his spraying costs? yes() no()
If yes, how does s/he do this? _____

18. What type of equipment do farmers have for spraying? knapsack sprayers(), tractor operated(), airplane(), other

19. What is the magnitude of the pest/disease damage with:

a. No control/treatment? _____

b. Optimum control/treatment? _____

Component 10 - Preharvest treatments

NAME OF DATA COLLECTOR: _____ TEL: _____

TITLE: _____ INSTITUTION: _____

1. Do the farmers in the region carry out any type of physical treatment to the crop prior to harvest which may affect production or its postharvest quality? yes() no()

If yes, please describe each treatment:

a. Name of physical treatment: _____

b. Description of action taken: _____

c. Why is this action taken? _____

d. Who carries out the action? _____

e. When is the action carried out? _____

f. Description of the impact or results of the action taken (how is the quantity, quality, storage, shelf lif 2DTct or 6Apa9oneut oetc.,ct proded)?F1 2048 Tf 100 Tz ()Tj /F1 2048 Tf 0.08935 0 0 -0.0

- a. _____
- b. _____
- c. _____
- d. _____

5. Summarize the problems resulting from preharvest treatments which may affect production, processing, postharvest, and marketing of the crop.

- 1.
- 2.
- 3.
- 4.
- 5.

Component 11 - Production and marketing costs

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Identify and select different farming alternatives to be analyzed, e.g., alternative A could be 1 hectare size farms and alternative B could be 20 hectare size farms.
2. For each alternative, establish basic assumptions about how the farm is operated, e.g.:
 - a. Labor: small farm may use all family labor and minimum purchased farm inputs; larger farm may hire labor and use optimum level of recommended farm inputs.
 - b. Market: small farmer may sell all produce at farmgate while large farmer might export 60% of production
 - c. Product sales price: maximum, minimum, average
 - d. Product yield: high, low, average
 - e. Number of plants/hectare
 - f. Number of years productivity of perennials
 - g. Production or expected production
 - h. Intended market
 - i. Others
3. Identify all the cost components and calculate their contribution to the cost of a unit
Quantity of the product
 - A. Capital investment:
 1. land premium
 - rent
 - taxes
 2. land clearing
 3. drainage
 4. fencing
 5. buildings
 6. vehicles
 7. irrigation equipment
 8. electricity
 9. farm equipment/machinery
 10. office equipment
 11. processing facilities
 - coldrooms
 - ripening room
 - table
 - weighing machine

12. others

B. Operating and maintenance:

1. rent
2. road and drainage maintenance
3. fencing maintenance
4. vehicle maintenance
5. facilities maintenance
 - water supply
 - insurance
 - building maintenance
6. agriculture tool replacement
7. fixed salary and wages
8. administration and management
9. costs of credit
10. others

C. Crop production costs:

1. land preparation
2. hilling
3. planting
 - material
 - labor
 - fertilizers
 - replacement plants
4. fertilization
 - labor
 - material
 -

- labor
- material
- equipment

8. bagging fruit on trees

- material
- labor

9. pruning and training

- labor
- equipment

10. harvesting cost

- labor
- boxes and baskets
- equipment

11. in-field transportation

- labor
- materials

12. other production costs

- pollinating agents
- others

D. Postharvest and marketing costs:

1. cleaning, sorting, grading, and selection

- material
- labor
- postharvest treatments

2. packaging and wrapping

- material
- labor

3. cooling

4. storage

5. loading/unloading

6. transportation cost

- field to packinghouse
- packinghouse to port

7. document & custom form
8. custom fees
9. freight charges
10. handling

E. Other costs

Component 12 - Crop harvest

NAME OF DATA COLLECTOR: _____ TEL: _____

TITLE: _____ INSTITUTION: _____

1. Who harvests the crop? _____

2. Describe in detail the harvest operation: _____

3. Why is the crop harvested in this particular manner? _____

4. When is the harvest undertaken? Time of day _____

5. Under what conditions? Temperature _____ Relative humidity _____

6. Does the present method of harvest appear to affect: quantity of produce available for market(), quality of produce available for market(), value of produce available for market()? Explain

7. Does the volume of produce unsuitable for market appear to be: high(), medium(), low()? Describe the causes, e.g., size of product, weather damage, pest damage, disease damage, lack of soil nutrients, sun damage, harvest damage, others _____

8. Estimate percentage of crop suitable for market: _____ %

9. Identify and describe the harvesting tools: _____

10. Is all of the crop harvested at one time? yes() no(). If no, why not and how is selection made for that part which is harvested? _____

11. Identify harvest seasons for each cultivar or variety of crop (if more than one):

<u>Cultivar</u>	<u>Months of harvest</u>	<u>No. months in crop cycle</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

12. Which, if any, cultivar produces off season? _____

13. Optimum harvesting parameters:

Moisture content _____

Color/appearance _____

Tenderness/texture _____

14. Maturity index known: yes() no(). If yes, describe: _____

15. What criteria are used by the pickers in selecting the product for harvest?

16. For the principal cultivar(s):

What is a good yield per hectare under good growing conditions? _____ tons

What is a good yield per hectare under average conditions? _____ tons

17. Sensitivity to mechanical damage during harvest: high(), medium(), low().

18. Sensitivity to dehydration: high(), medium(), low().

19. Summarize the problems occurring at harvest which may affect the processing, postharvest handling, or marketing of the product.

1.

2.

3.

4.

5.

20. Observations:

Component 13 -A - Selection

NAME OF DATA COLLECTOR: _____ TEL: _____
 TITLE: _____ INSTITUTION: _____

1. Identify the points in the postharvest system where some form of selection takes place.

<u>POINT IN THE SYSTEM</u>	<u>ACTION THAT TAKES PLACE</u>
_____	_____
_____	_____
_____	_____

2. For each action identified above provide the following information:

- Name of action: _____
- Time required for the action to take place: _____
- Describe the action: _____
- Who is responsible for conducting the action? _____
- When is the action carried out? _____
- Why is this action carried out? _____
- Where is this operation carried out? _____
- Is the activity carried out with laborers? yes () no ()
 If yes, how many? _____
- Is the activity carried out with machines/tools/equipment? yes () no ()
 If yes, identify and describe: _____
- What criteria are used in this action?

	<u>Yes</u>	<u>No</u>	<u>Describe</u>
- product shape	()	()	_____
- product size	()	()	_____
- product weight	()	()	_____
- maturity	()	()	_____
- color	()	()	_____
- pest/disease damage	()	()	_____
- physical injury	()	()	_____
- mechanical injury	()	()	_____
- cleanliness	()	()	_____
- other _____	()	()	_____

k. Is this operation required to meet market demand?
 yes () no () Explain: _____

i. What is (are) the probable end use(s) of culled product? _____

3. If the product is divided into different groups or categories at this point due to the selection process, identify the different categories and the approximate % of produce moving into each channel.

For example:

<u>Grade</u>	<u>% of Total</u>	<u>Destination</u>
1st Grade	40%	Export
2nd Grade	35%	Domestic market
3rd Grade	15%	Agro-processing
Culls	<u>10%</u>	Animal feed
Total	100%	

4. What portion of culled product, if any, is a complete loss and does not generate any economic return? _____ %

Explain _____

5. Identify any problems occurring at this point which may affect postharvest losses.

- 1.
- 2.
- 3.
- 4.
- 5.

Component 13-B - Sizing and grading

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Identify the points in the postharvest systems where some form of sizing or grading takes place.

<u>POINT IN THE SYSTEM</u>	<u>ACTION THAT TAKES PLACE</u>
_____	_____
_____	_____
_____	_____

2. For each action identified above provide the following information:

- Name of action: _____
- Time required for the action to take place: _____
- Describe the action: _____

- Who is responsible for conducting the action? _____
- When is the action carried out? _____
- Why is this action carried out? _____
- Where is this operation carried out? _____
- Is the activity carried out with laborers? yes() no()
If yes, how many? _____

3. Are any sizing or grading standards used for this commodity? yes() no()
If yes, identify and describe the standard: _____

4. If the product is divided into different groups or categories at this point due to the sizing or grading process, identify the different categories and the approximate % of

Component 13 -C - Inspection

NAME OF DATA COLLECTOR: _____ TEL: _____
 TITLE: _____ INSTITUTION: _____

1. Identify the points in the postharvest systems where some form of inspection takes place.

<u>POINT IN THE SYSTEM</u>	<u>ACTION THAT TAKES PLACE</u>
_____	_____
_____	_____
_____	_____

2. For each action identified above provide the following information:

- Name of action: _____
- Time required for the action to take place: _____
- Describe the action: _____

- Describe the sampling procedure: _____

- Who is responsible for conducting the action? _____
- When is the action carried out? _____
- Why is this action carried out? _____
- Where is this operation carried out? _____
- Is the activity carried out with machines/tools/equipment? yes () no ()
 If yes, identify and describe: _____

j. What criteria are used in this action?

(A) Quality control (packinghouse line)

	<u>Yes</u>	<u>No</u>	<u>Describe</u>
- product shape	()	()	_____
- product size	()	()	_____
- product weight	()	()	_____
- maturity	()	()	_____
- color	()	()	_____
- pest/disease damage	()	()	_____
- physical injury	()	()	_____
- mechanical injury	()	()	_____
- cleanliness	()	()	_____
- other _____	()	()	_____

(B) Plant quarantine (exporting and importing)

	<u>Yes</u>	<u>No</u>	<u>Describe</u>
- disease	()	()	_____
- pest	()	()	_____
- chemical residues	()	()	_____
-other_____	()	()	_____

(C) Customs

	<u>Yes</u>	<u>No</u>	<u>Describe</u>
- drug control	()	()	_____
- pest/disease	()		

Component 14 - Postharvest chemical and physical treatments

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

CHEMICAL TREATMENT

1. Is any chemical applied to the commodity during the postharvest stage? yes () no () If yes, list the chemicals below:

Generic name: a. _____ Brand name: a. _____
 b. _____ b. _____
 c. _____ c. _____

2. For each chemical used, answer the following questions.

- a. What is the name of the chemical? _____
- b. Why is the chemical used? _____
- c. Who applies the chemical? _____
- d. When is the chemical applied? _____
- e. Where is the chemical applied? _____
- f. How often is the chemical applied? _____
- g. How is the chemical applied (spray, dip, etc.)? _____
- h. In what concentration is it applied? _____
- i. Does the use of this chemical represent a health hazard for workers? _____
yes () no (); for consumers? yes () no (). If yes, explain: _____
- _____
- _____
- j. Costs of treatment? _____

Observations:

PHYSICAL TREATMENT

1. Does this product receive any special physical treatment in the postharvest stage which affects its quality, shelf life marketability? yes () no ()

2. If yes, identify each type of physical treatment:

- a. _____
- b. _____
- c. _____

3. For each physical treatment, provide the following information:

- a. Name of physical treatment: _____
- b. Description of treatment: _____
- c. Purpose of treatment: _____

d. Who undertakes the treatment? _____

e. When is the treatment done? _____

f. Where is the treatment undertaken? _____

g. What costs are involved in the treatment? _____

Observations:

4. Summarize the problems at this point which may affect processing or postharvest losses of product.

1.

2.

3.

4.

5.

Component 15 - Packaging

NAME OF DATA COLLECTOR: _____ TEL: _____
 TITLE: _____ INSTITUTION: _____

1. Identify the points in the postharvest system where packaging or repackaging occur:

	<u>Yes</u>	<u>No</u>	<u>Describe</u>
- on the farm	()	()	_____
- rural collection pant	()	()	_____
- regional collection point	()	()	_____
- packinghouse	()	()	_____
- local market	()	()	_____
- wholesale market	()	()	_____
- cottage industry	()	()	_____
- agro-industry	()	()	_____
-supermarket	()	()	_____
- point of export	()	()	_____
- other _____	()	()	_____

2. For each instance where packaging takes place, provide the following information:

- Why is it necessary to package? _____
- Who undertakes the packaging? _____
- Where does the packaging take place? _____
- When does the packaging take place? _____
- How long does the packaging process take? _____
- How is the product handled/packaged (describe)? _____

- What type of packaging material is used? _____
- Why is that particular packaging material used? _____

i. What is the size of the package used?

- dimensions (cm) _____ x _____ x _____
- number of units of product per package _____
- weighs of package: gross _____ net _____

j. Does the particular package have the mechanical strength to adequately protect the product during:

	<u>Yes</u>	<u>No</u>	<u>Comments</u>
- handling	()	()	_____
- transportation	()	()	_____
- stacking	()	()	_____
- storage	()	()	_____
- other	()	()	_____

k. Is the packaging material readily available? yes() no()

l. Does the package meet the handling and marketing requirements in terms of:

	<u>DOMESTIC MARKET</u>		<u>EXPORT MARKET</u>		<u>IF NEGATIVE</u>
	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Explain</u>
- weight	()	()	()	()	_____
- size	()	()	()	()	_____
- shape	()	()	()	()	_____
- material	()	()	()	()	_____
- design	()	()	()	()	_____
- labelling	()	()	()	()	_____

m. Can the package be re-used? yes() no()

If yes, state the estimated number of times:_____

n. Who owns the package (container)?_____

o. If the containers are reused, explain the procedure._____

p. What is the per unit cost of the package or container?_____

q. What is the cost of the labor involved in packaging?_____

3. a. Is cushioning material used? yes() no()

If yes, what type?_____

Why that particular type?_____

b. Can the cushioning material be re-used? yes() no()

If yes, state the estimated number of times:_____

c. What is the cost of the cushioning material per container?_____

4. If produce is not packaged, why not? Not needed() Lack of knowledge()

Lack of materials() Not economical()

Other_____

5. Summarize problems which affect postharvest losses due to packaging or lack of:

- 1.
- 2.
- 3.
- 4.
- 5.

6. Observations

Component 16 - Cooling

NAME OF DATA COLLECTOR: _____ TEL: _____

TITLE: _____ INSTITUTION: _____

1. Does this product undergo cooling? yes() no()

If no, why not? _____

If yes, provide the following information:

2. What time of day is the product normally harvested? early morning(), morning(), afternoon(), evening(), anytime()

3. What is the normal air temperature during harvest? _____

4. Is it considered important to precool this crop? yes() no()

Explain: _____

5. What method of cooling is used? standard cool room(), hydro(), icing(), evaporative(), forced air(), air conditioning(), other

6. How is cooling carried out (describe procedure and equipment used)?

7. How long after harvest is the cooling performed? 0-3 hours(), 4-7 hours(), 8-16 hours(), 17-24 hours(), more than 24 hours().

8. Where is the cooling carried out? on-the-farm(), collecting center(), packing center(), market(), other

9. Who performs the cooling? farmer(), middleman(), buyer(), government(), other

10. How long is the cooling period? _____ hours

11. What is the temperature range of the cooling medium? _____

12. Once cooled, is the product ever removed from the cool chain on its way to the final market? yes() no()

Describe: _____

13. What are the costs of the cooling operation, per kg of produce?_____

14. Summarize problems identified at this point which may affect postharvest losses and/or marketing of the product.

- 1.
- 2.
- 3.
- 4.
- 5.

15. Observations:

Component 17 - Storage

Describe: _____

n. Is the product normally stored by itself (), or with other producer ()? If with other produce, specify what kind: _____

o. Describe the type of container in which the product is packaged during storage.

p. Who owns the storage facilities? _____

q. Who operates the storage facilities? _____

r. What is the cost of holding the produce? _____

s. Is the storage facility operated efficiently? yes () no ()

If no, explain: _____

3. Summarize storage problems which may affect postharvest losses.

1.

2.

3.

4. Observations:

Component 18 - Transport

NAME OF DATA COLLECTOR: _____ TEL: _____
 TITLE: _____ INSTITUTION: _____

1. Identify each point in the commodity system where the product undergoes movement from one point to another with the purpose of getting it to a new location.

	<u>Where transportation takes place</u>	<u>Method of transport</u>
a.	from _____ to _____	_____
b.	from _____ to _____	_____
c.	from _____ to _____	_____
d.	from _____ to _____	_____
e.	from _____ to _____	_____

2. For each case identified above, provide the following information:

- From _____ to _____
- Who is responsible for the transportation? farmer(), middleman (), wholesaler(), retailer(), government(), other _____
- When is produce normally transported? early morning(), morning(), afternoon(), evening(), night(), anytime().
- Method of transport? human(), animal(), motorcycle(), truck(), ship(), airplane(), other _____

e. Describe the transportation process. _____

f. Describe the containers used during this stage of transport. _____

g. How is produce stacked during transport? _____

h. Identify and describe any type of damage/bruising which occurs to the product during transport.

i. Identify the costs involved during this stage of transportation:

<u>Type costs</u>	<u>Yes</u>	<u>No</u>	<u>Type unit</u>	<u>Cost/unit</u>
- labor	()	()	_____	_____
- packaging	()	()	_____	_____
- animal rental	()	()	_____	_____
- vehicle service	()	()	_____	_____
- containers	()	()	_____	_____
- other _____	()	()	_____	_____

j. What is the duration of this stage of transport?

hours _____
days _____

k. What is the distance covered? _____

l. Who owns the containers during this stage of transport? _____

m. Who owns the product during transport? _____

3. Summary of problems during transport which may affect processing, postharvest handling, or marketing.

- 1.
- 2.
- 3.
- 4.
- 5.

4. Observations:

Component 19 - Delays or waiting

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Identify all those points in the postharvest system where delays or waiting occur.

	<u>Yes</u>	<u>No</u>	<u>Describe</u>
- on the farm	()	()	_____
- during transport	()	()	_____
- at packinghouse	()	()	_____
- at wholesale market	()	()	_____
- at retail market	()	()	_____
- at processing factory	()	()	_____
- at supermarket	()	()	_____
- at airport	()	()	_____
- at seaport	()	()	_____
- other _____	()	()	_____

2. For each instance of delay or waiting, provide the following information:

a. Point in system where delay or waiting occurs (from 1 above) _____

b. What is the cause of delay? _____

c. Who is responsible for the delay? _____

d. How long is the normal delay at this point? minutes _____ hours _____
days _____

e. What can be done to reduce the time of the delay? _____

f. How is the product protected at the point of delay? _____

g. What are the environmental conditions for the product at the point of delay? direct
sunlight or shade _____, temperature _____, relative humidity
_____, air movement _____, other debilitating environmental
conditions: _____

h. Describe how the delay or waiting may affect the quality of the product (changes in
appearance, texture, aroma, flavor, weight loss/gain, disease development,
etc.). _____

i. Does the delay affect the price of the produce? yes() no()

If yes, explain: _____

3. Summarize those problems caused by delays/waiting which may negatively affect
processing, postharvest handling, or marketing.

- 1.
- 2.
- 3.
- 4.
- 5.

4. Observations:

Component 20 - Other operations

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Operation name Point in food system where operation occurs

_____	_____
_____	_____
_____	_____
_____	_____

2. For each operation, provide the following information:

- a. Name of operation. _____
- b. Describe what takes place. _____
- c. Who executes the operation? _____
- d. Where is the operation carried out? _____
- e. When is the operation carried out? _____
- f. Why is it done in the present manner? _____
- g. What is the impact of this operation on quality or quantity of the product? _____
- _____
- h. How could this operation be improved? _____
- _____

3. Identify and describe all problems related to these operations which can affect processing, postharvest handling, or marketing of the product.

- 1.
- 2.
- 3.
- 4.
- 5.

4. Observations:

9. Is the estimated demand for the processed output greater than(), equal to(), or less than(), the supply?

10. Intended market for processed output:_____ % export,_____ % domestic

11. Why is the product processed?

- to satisfy consumer demand (import substitution)
- to reduce postharvest losses
- to extend shelf-life
- other (specify)_____

12. Does the processor contract for raw materials? yes() no()

If no, what guarantee does the processor have to receive adequate supply of raw materials?

13. What are the principal constraints to processing?

- insufficient raw materials
- lack of packaging materials
- high costs of raw materials
- high costs of other inputs (specify)_____
- insufficient energy
- expensive energy costs
- lack of qualified labor
- antiquated equipment/machinery
- other (specify)_____

14. Observations:

Component 22 - Marketing intermediaries

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Identify the different types of intermediaries involved with the marketing of the product under study.

<u>Type of intermediary</u>	<u>Brief description</u>
Local collectors/traders:	_____
_____	_____
Wholesalers:	_____
_____	_____
Retailers:	_____
_____	_____
Government buyers:	_____
_____	_____
Institutional buyers:	_____
_____	_____
Exporters:	_____
_____	_____
Agroprocessors:	_____
_____	_____
Others:	_____
_____	_____
_____	_____

2. For each type of intermediary identified in 1, provide the following information:

a. Describe the principal functions of this type of intermediary _____

b. How does the intermediary carry out these functions? _____

c. Where are these functions carried out? _____

d. When are these functions carried out? _____

e. Other persons involved in carrying out these functions? _____

f. Why are these actions carried out in the present manner? _____

g. What facilities, equipment, vehicles, etc., does the intermediary use to carry out the activities?

h. What is an average sized operation for this type of intermediary (tons of product handled per calendar year)?

i. How could the handling of this product be improved? _____

j. Would improvement in handling increase costs for the operation? yes() no()

k. If yes, can this cost be passed on to consumers? yes() no()

l. What are the principal constraints for this intermediary which affect the efficient handling of the product?

3. Are there any ethnic groups which specialize in marketing? yes() no()

If yes, how does this affect:

a. Quality _____

b. Price _____

c. Cost _____

4. If possible, collect the following information from each type of intermediary:

a. How is price determined? _____

b. Who determines the price? _____

c. Is product quality a problem? yes() no()

d. Is obtaining sufficient volume a problem? yes() no()

Explain: _____

e. What tricks do farmers use when selling produce to intermediaries (e.g. adding foreign material, placing best produce on top, etc.)?

5. Summarize problems relating to intermediaries which affect postharvest handling and/or marketing and/or processing.

1.

2.

3.

Component 23 - Market information

NAME OF DATA COLLECTOR: _____ TEL: _____
 TITLE: _____ INSTITUTION: _____

1. Is statistical price information available for the commodity under study?
 yes() no()

2. If yes, for what calendar years? _____

3.

<u>Type of price information available</u>	<u>Frequency of Information</u>			
	<u>daily</u>	<u>weekly</u>	<u>monthly</u>	<u>yearly</u>
Farm gate	()	()	()	()
Wholesale	()	()	()	()
Retail	()	()	()	()
Export	()	()	()	()

4. Has a seasonal price index been prepared for this crop? yes() no()

5. If a seasonal price index exists, which are the months of the year when prices are lowest? _____ highest? _____

6. During those months when prices are lowest, are the low prices due to:

	<u>Yes</u>	<u>No</u>
- decline in consumer demand	()	()
- favorable growing conditions/excess supply	()	()
- poor production planning/excess supply	()	()
- increase in imports	()	()
- reduction of exports	()	()
- trade regulations	()	()
- increase in supply of substitutes	()	()
- other _____	()	()

7. During those months when prices are highest, are the high prices due to:

	<u>Yes</u>	<u>No</u>
- increase in consumer demand	()	()
- poor growing conditions/scarcity	()	()
- poor production planning/scarcity	()	()
- reduction in imports	()	()
- increase of exports	()	()
- trade regulations	()	()

- decline in supply of substitutes ()

- 1.
- 2.

Component 24 - Consumer demand

NAME OF DATA COLLECTOR: _____ TEL: _____
 TITLE: _____ INSTITUTION: _____

1. What percent of total national production of this product is sold on the domestic market? _____ % export market? _____ %
2. What percent of the production in the geographical area under study goes to the domestic market? _____ % export market _____ %
3. Which consumers purchase the product in domestic and export markets.

	<u>Domestic market</u>	<u>Export market</u>
- low income consumers	_____ %	_____ %
- medium income consumers	_____ %	_____ %
- high income consumer	_____ %	_____ %
Total(%)	100	100

4. Indicate ethnic group consumption of this product:

<u>Ethnic group</u>	<u>Domestic market</u>	<u>Export market</u>
_____	_____ %	_____ %
_____	_____ %	_____ %
_____	_____ %	_____ %
Total (%)	100	100

5. For each important consumer group identified above, provide the following information for the applicable questions:

- a. Preferred cultivar? _____
- b. Preferred size? _____
- c. Preferred color? _____
- d. Desired flavor? _____
- e. Desired texture? _____
- f. Preferred degree of maturity? _____
- g. Preferred type of package? _____

I. Desired product characteristics for religious, cultural, and medicinal uses:

religious: _____

cultural: _____

medicinal uses: _____

other: _____

6. Summarize the characteristics of consumer demand which are most likely to affect the marketability of the product in question.

1.

2.

3.

4.

5.

7. Observations:

Component 25 - Exports

NAME OF DATA COLLECTOR: _____ TEL: _____

TITLE: _____ INSTITUTION: _____

1. Name of crop to be exported: _____

Variety/cultivar/clone: _____

2. Characteristics of external demand:

a. For each potential export destination (e.g., UK, Japan, USA, or Germany) complete the following information:

- preferred cultivar _____
- preferred size _____
- preferred weight _____
- preferred color _____
- desired flavor _____
- acid/brix ratio _____
- preferred texture _____
- preferred degree of maturity _____
- desired packaging _____
- pest control requirements _____
- disease control requirements _____
- chemical residue limits _____
- grades & standards used _____
- other desired crop characteristics (e.g., due to religious or cultural preferences) _____

b. Is this market very susceptible to:

Yes

6. Can the farmers/intermediaries meet the external demand requirements with respect to:

	<u>Yes</u>	<u>No</u>	<u>Comments</u>
- proper cultivar/variety	()	()	_____
- product size	()	()	_____
- product weight	()	()	_____
- color	()	()	_____
- flavor	()	()	_____
- texture	()	()	_____
- maturity	()	()	_____
- freedom from pests	()	()	_____
- freedom from disease	()	()	_____
- appearance	()	()	_____
- quarantine controls	()	()	_____
- health regulations	()	()	_____
- trade restrictions	()	()	_____
- packaging requirements	()	()	_____
- product quantity	()	()	_____
- product quality	()	()	_____
- price	()	()	_____
- others: _____	()	()	_____
_____	()	()	_____

7. Summary of principal problems with respect to exports.

- 1.
- 2.
- 3.
- 4.
- 5.

8. Observations:

Component 26 - Postharvest and marketing costs

NAME OF DATA COLLECTOR: _____ TEL: _____
TITLE: _____ INSTITUTION: _____

1. Identify each step (operation) in the marketing channel (for the product being studied), from the point of harvest to sales, and present them in a list. Consider such aspects as: harvest, selection, grading, packaging, cooling, transport, processing, wholesaling, retailing, exporting, and others.
2. Prepare a list of all the different types of participants involved in the marketing of the product in question, considering: farmers, farmer organizations, rural traders, intermediaries, wholesalers, retailers, supermarkets, agro-processors, marketing boards, government institutions, transport companies, cool storage suppliers, packing house operators, customs, port personnel, and others.
3. For each participant in the commodity system, identify respective postharvest and marketing costs which affect the price of the commodity, considering such things as: labor, materials, equipment, chemical and physical treatments, vehicles, transportation fees, storage, processing, cooling services, packaging, grading/sorting, inspection, custom fees, technical assistance, and others.
4. From point of harvest to retail, list the operations (steps in marketing channel) in the order in which they occur. For each operation, list the respective participants, type of cost, and the respective cost. For example:

<u>Operation</u>	<u>Participants</u>	<u>Cost items</u>	<u>Costs</u>
Harvest	Traders	Supervision	\$8.00/day
	Pickers	Picking, selection	\$0.06/kg
Packing	Packers	Labor	\$0.01/kg
		Cushion material	\$0.04/kg
		Cartons	\$1.35/kg

Annex 2 - Example questionnaires for collecting information on public sector institutions, farmer organizations, and development projects

Annex 2 -A - Format for the collection of information on public sector institutions affecting agricultural commodity systems

1. Name of the institution: _____
Relevant subdivisions: _____

2. Names/titles of key persons within the institutions who directly or indirectly affect the commodity system of interest, and how:

Name/Title ex: Sammy Jones/Project Officer How person makes impact formulated potato project

3. List staff who work with or in some way affect the product of interest:

8. Identify and describe planned projects by this institution which will affect the commodity:

<u>Name of project</u>	<u>Begin date</u>	<u>End date</u>	<u>Cost</u>	<u>Source of \$</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

9. Summarize principal institutional actions and activities which affect the product of interest (repeat for each action/activity):

Action/activity #1: _____
Effective dates: from _____ to _____
Description: _____

10. Summarize services provided by the institution which affect the commodity system (repeat for each service):

Service #1: _____
Type service: ex: price information, credit, training _____
Description: _____

11. Summarize principal institutional constraints affecting the product (repeat for each constraint):

Constraint #1: _____
Description of constraint: _____

Impact of constraint (how it affects product): _____

12. Other observations: _____

Annex 2 -B - Information on farmer organizations

1. Name of farmer organization: _____
2. Year founded: _____
3. Address/location: _____
4. Name

- a. Other farmer organizations: _____
- b. Public sector institutions: _____
- c. Support organizations: _____
- d. Donor organizations: _____
- e. Others (specify): _____

Annex 2 -C - Inventory of development projects and activities affecting the commodity system

1. Prepare a list of all projects and activities which may affect the product being studied.

2. For each project or activity, answer the following questions:

a. Name of the project or activity: _____

b. Beginning date: _____ Ending date: _____

c. Sponsoring institution: _____

d. Total cost: US \$ _____ Local \$ _____

e. Objectives: _____

f. Status: () ahead of schedule, () on schedule, () behind schedule

g. Principal constraints affecting project: _____

h. Expected impact on the product being studied: _____

3. For each project activity, identify the technical personnel associated with the product of interest.

<u>Name</u>	<u>Area of expertise</u>	<u>Time to be in country</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Ann ex 3 - Summary of the production process for starfruit in Malaysia, 1988

ACTION WHO

						up to 80%
Weed control	farmer hired labor	mechanical and/or chemical	circle or clear weeding	as necessary	to reduce pest infestations and competition for nutrients	farm
Pollination	farmer	reared honey bees to improve pollination; graft clones with high pollen production	1 beehive per acre; 1 graft per tree	pollination is continuous	the B10 clone appears to be self-infertile; experience with cross pollination shows increased fruit set and production	on the tree
Pruning & training	farmer hired labor	excessive water shoots removed; branches trained to grow horizontally	manually cut; branches weighed down with strings & weights	pruning water shoots as necessary; pruning to control height at 4-5 years; continuous training	facilitates bagging & harvesting; remove unproductive water shoots	on the tree
Thinning & bagging	farmer hired skilled labor	select & maintain one good fruit per inflorescence	manually bag for pest & disease control	thin to leave one well formed fruit/cluster; bag 2-3 weeks after flowering	produce good quality (uniform big size & clean) and insect free fruits	on the tree
Harvesting	farmer hired labor	bagged fruits are handpicked		60-65 days after fruit set; in the morning	to get turgid fruits; to enable packing and transport in the afternoon	farm

Source: Malaysian Agricultural Research and Development Inst., 1988, pp. 33-34.

Annex 4 - Magnitude of losses relating to preharvest factors for starfruit in Malaysia, 1988

OPERATIONS	INSIGNIFICANT		SIGNIFICANT		VERY SIGNIFICANT	
	Qty	Qty	Qty	Qty	Qty	Qty
1. Land preparation	nd	nd				
2. Lining & holing	nd	nd				
3. Planting material			< 3%	< 3% ^a		

h - Thinning is carried out to select one fruit per florescence to increase individual fruit size and quality.

Source: Malaysian Agricultural Research and Development Inst. 1988, pp. 35-36.

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