




FOOD SAFETY FIRST COSTING TOOL

USER MANUAL | February 2023





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SUMMARY: FOOD SAFETY FIRST COSTING TOOL

Food safety is the totality of systems, processes, and practices in the production, processing, and packaging/storage of food for human consumption that ensure adequate hygiene, preservation, and quality from procedure to end consumer.

More and more recognition and attention from consumers and governing bodies worldwide is being gained concerning food safety. Concern for global food security first gained momentum in 2008 when the G7 countries collectively met and agreed that there was a need for a global food security initiative.

Food safety is an integral part of a well-nourished population. Foodborne illnesses cost low- and middle-income countries \$110 billion in lost productivity and medical expenses each year. South Asia, Southeast Asia, and Sub-Saharan Africa account for 41 percent of the global population, but that segment of the world population is afflicted with 53 percent of all foodborne illnesses and 75 percent of related deaths.

To foster consumer demand and food safety confidence in food supply chains, numerous international trade organizations now require sanitary and phytosanitary systems (SPS) to be maintained at the highest standards. Smallholder farmers, farmer organizations, buyers, and governments of developing countries must meet these phytosanitary standards or risk export shipment rejections. External systems are forcing developing country governments to make strategic choices in establishing domestic standards, upgrading infrastructure, and broadening the knowledge base of smallholder farmers (see [Achieving Food Safety White Paper](#) for more details on this report).

With a growing need to have safe, quality food there is an importance to adhere to food safety standards of buyers and regulatory bodies. Farmers and farmer organizations will need to continually update their agricultural and food handling practices to ensure competitiveness in the domestic, regional, or international market.

To address these important gaps, the Agribusiness Market Ecosystem Alliance (AMEA) Tool Facility Improvement project, implemented by Corus International, a US-based international non-profit organization, developed the Food Safety First Costing Tool to help users:

- i. understand existing resource gaps in their farming operations and agribusiness,
- ii. advocate for end-market buyer resources to upgrade operations, and
- iii. create a strategy for planning future loans and investments for farming operations and agribusinesses.

This User Guide is an accompanying document to the excel-based Food Safety First Costing Tool Workbook (named Costing Tool). The Costing Tool is divided into the four separate Workbooks according to the categories of: (1) Legumes/Grains, (2) High Value Horticulture, (3) Coffee/Cocoa/Spices, and (4) Livestock/Poultry; with an additional fifth workbook that encompasses all of the four separate Workbooks in one document. It is available for download on the Corus International website (www.corusinternational.org). The Costing Tool is designed to be used by farmers, farmer organizations, cooperatives and enterprises, aggregators and traders, processors, and buyers. It will also help them to be aware of how to be compliant with food safety standards. Users of the Costing Tool and User Manual should review the guidance against their country's local laws and the importing country's laws for food safety and sanitary and phytosanitary systems (SPS).

Who can use the Costing Tool?

The Costing Tool can be used by any individual farmer, farmer organization, associations, cooperatives, micro-, small- and medium enterprise, and agribusiness, trader, aggregator, intermediary or processor.

The user should have a reasonable understanding of budget costs, literacy levels and capacity to use an excel-based workbook. If the user does not, please reach out to others in your farmer organization, or project staff and/or business development service providers to assist you.

Who can benefit from using the Costing Tool?

Farmer, farmer organization, associations, cooperatives, micro-, small- and medium enterprise, and agribusiness, trader, aggregator, intermediary or processor.

We recognize that farmers and farmer organizations may not keep farm or budget records on a consistent basis. The Costing Tool is designed to be practical and logical. The farmer or farmer organization is entering information in that is their own. The Costing Tool can be adapted and updated continuously.

Why use the Costing Tool?

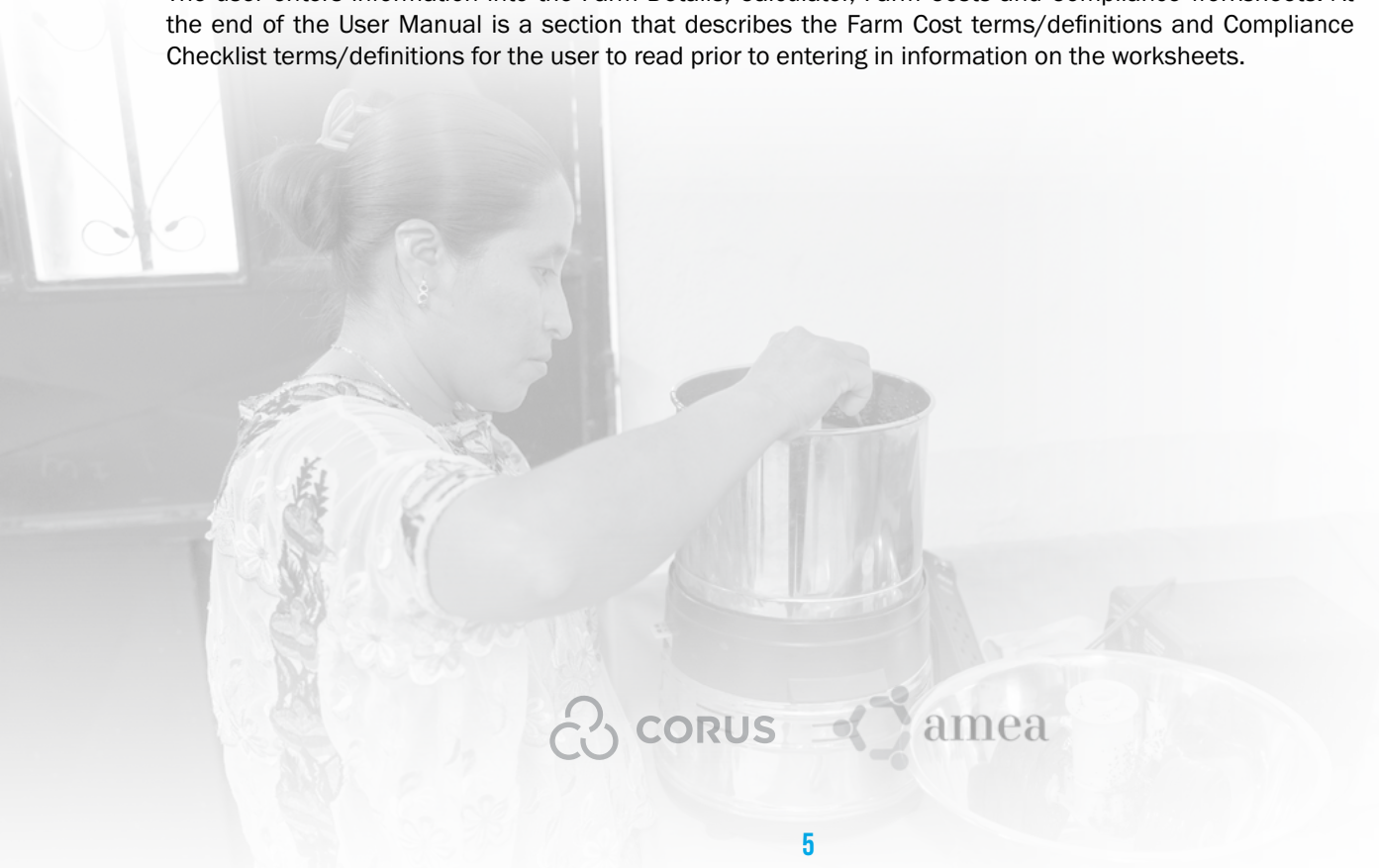
The Costing Tool serves as a guide for leading new planning and costing practices that integrate food safety requirements. The Costing Tool does not replace a farmer or farmer organization's current farm budget management. It is a supplemental Tool to this.

It is anticipated that the Costing Tool can guide farmer and farmer organizations to better understand their own safety standards on the farm, and plan for the future.

How to use the Food Safety First Costing Tool Workbook

The Costing Tool workbook is divided into eight worksheets (aka tabs). These are as follows: (1) Overview, (2) Farm Details, (3) Dashboard, (4) Farm Costs Summary, (5) Calculator, (6) Farm Costs, (7) Compliance, (8) Terms and Definitions for Farm Cost Items, (9) Terms and Definitions for Compliance Checklists, and (10) Food Safety Resources.

The user enters information into the Farm Details, Calculator, Farm Costs and Compliance worksheets. At the end of the User Manual is a section that describes the Farm Cost terms/definitions and Compliance Checklist terms/definitions for the user to read prior to entering in information on the worksheets.




OVERVIEW WORKSHEET



1 // OVERVIEW WORKSHEET

The Overview worksheet provides a quick overview of how to use the Costing Tool spreadsheet. It is recommended you use both the Overview tab description and the User Manual when entering information into the Worksheet.



Overview: Livestock/Poultry

- Farm Details
- Dashboard
- Farm Costs Summary
 - Calculator
 - Farm Costs
- Compliance
- Food Safety Resources

Overview: Livestock/Poultry

[Click to View User Manual](#)

The Food Safety First Costing Tool is designed to assist farmers and farmer organizations to better analyze the costs associated with making the necessary food safety upgrades to help them meet global food safety standards. When implemented correctly, these updates will help farmers and farmer organizations be better prepared to apply for and receive food safety certificates that will help them meet local government standards, achieve a higher level of competitiveness in their markets, and reduce the risk of food borne illnesses.

The farmer or farmer organization will enter information into the tool and certain areas will then be auto populated to better help the farmer or farmer organization to plan for and implement food safety practices.

Step 1: Enter your information into the **Farm Details** worksheet

Step 2: Review the Farm Costs and Compliance Requirements worksheets in the Costing Tool Workbook and User Manual.

Step 3: Develop a strategy on how best to begin updating your farm/farmer organization to best comply with the industry standards for food safety. The **Calculator** is a helpful tool to use. Some may find it helpful to split up their food safety updates over the course of three years rather than doing all the updates in one year. If updates are spread out over multiple years, the **Farm Costs** Worksheet estimates will need to be updated the next year to reflect the current costs.

Step 4: Enter the projected line item costs for each of the **Farm Costs** line items. Again, be sure to update these in subsequent years if the food safety updates are being spread out over multiple years.

Step 5: Update the **Compliance Checklist** worksheet for Year 1

It is helpful for the farmer or farmer organization to meet with your buyer(s) to ensure you understand their requirements. General **Compliance Indices** and **Compliance Variables** have been listed on each of these tabs, but space has been allotted for you to add an additional requirement if you need it.

You will then take a random sample of your product(s) and compare them to the **Compliance Variable** standards. Rate the samples for each of the **Compliance Variables** with a 1, 2 or 3.

1 = meaning the sample does NOT meet the standard at all

2 = meaning the sample SOMEWHAT meets the standard

3 = meaning the sample ALWAYS meets the standard

If one or more of the **Compliance Variables** does not apply to your product(s) please leave those line items blank.

Step 6: Complete these steps once again during your year 2 and year 3 farm/farmer organization updates.

Please review the User Manual for a more complete understanding of how best to use this **Costing Tool** workbook as well as detailed descriptions of the terms used in this tool, including the various costs associated with food safety and compliance standards for each kind of agricultural product.



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FARM DETAILS WORKSHEET



2 // FARM DETAILS WORKSHEET

The Costing Tool is created to help a farmer and farmer organization to integrate the components of food safety into farming practices. Each farm and farmer organization are unique. The Costing Tool allows the user to enter their farm or farmer organization's details. Some of the sections will not apply to you, your farm or farmer organization. If that is the situation, the entry can be skipped, or left blank, zero, or not applicable (n/a).

EXAMPLES:

- Farmer A grows bananas and pineapples (**High Value Horticulture**). Farmer A enters data and information into the High Value Horticulture Costing Tool spreadsheet.
- Farmer B produces only goats (**Livestock/Poultry**). Farmer B enters data and information into the Livestock/Poultry Costing Tool spreadsheet.
- Farm organization B grows two (or more) food products (agricultural commodities), such as maize (**Grains**) and tomatoes (**High Value Horticulture**). Farm organization B enters data and information into two spreadsheets: (1) the Legumes/Grains Costing Tool spreadsheet and (2) the Coffee/Cocoa/Spices.

1

Step 1: Farm Details

Click on the **Farmer Details** tab and fill in the information for your individual farm/farmer organization. Information entered in this section will be automatically populated into the corresponding sections of the Costing Tool.

Step 1: Entering Farm Details

Open the Costing Tool workbook for your selected commodity spreadsheet, e.g. Livestock/Poultry.

- Click on the **Farm Details** worksheet (tab) to open it. *Information entered in the Farm Details worksheet will automatically enter into the other worksheets of the costing tool.*

Enter the data and information for your **farm and/or farmer organization**. This involves entering the type of agricultural product / commodity you produce.

- Select the category of agricultural product (commodity) based on the dropdown menu. This is done by clicking on the far right of the box and choosing from a list of options.
- Now list all the agricultural products that pertain to that category.
- There is space to list an "other" category of agricultural product. This can be used if you produce an agricultural product that does not fit into any of the main categories listed.
- Please note that, at this time, there are not any **Farm Costs** or **Compliance** tabs for any categories listed as "Other."



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EXAMPLE:

The president of Farmer A grows high value horticulture products and plans to fill out this Costing Tool. Enter the name of the individual and the organization. Enter the data for the remaining boxes that includes country, location, local currency, exchange rate to US dollar (at the rate for the day), and the current year, and the date is the person is using the Costing Tool.

As well as Year 1, Year 2, Year 3. For example, Farmer A has a current year of 2023. Year 1 entry is the date (day-month-year), e.g. 01-01-2023. Then enter 01-01-2024 (Year 2) and 01-01-2025 (Year 3).

The years will automatically populate the entire spreadsheet.

- The next entry is about what type of **agricultural product** is produced. The **Primary** category of agricultural products is the main commodity/livestock Farmer A has, e.g. bananas. The **Secondary** product is pineapples. Farmer A clicks inside each box to insert the information; First, the high value horticulture (on the left) and then types in the actual type of high value horticulture products of bananas (on the right).
- When Farmer A has completed all the boxes proceed to **Step 2. Farm Cost Terms**.



Overview: Horticulture

Farm Details

Dashboard

Costs Projections

Calculator

Farm Costs

Compliance

Food Safety Resources

Farm Details

Horticulture

Agricultural Products

(High Value)

Farmer / Farmer Organization Data

Name of Farmer	Farmer A	Name of Farmer Organization	Farmer A
Country	Kenya	Location (Province/District/Municipality)	Kakamega County

Local Currency	Kenyan Shilling	Exchange Rate to US Dollar	126.41 Shillings
----------------	-----------------	----------------------------	------------------

Current Year	2023
--------------	------

Example: 2023

Dates Cost Tool was last updated

DD-MM-YY

Year 1	03/01/23
Year 2	
Year 3	

What Horticulture Agricultural Product(s) are Produced on Your Farm?

Primary	Bananas
Secondary	Pineapples
Additional	
Additional	



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DASHBOARD WORKSHEET

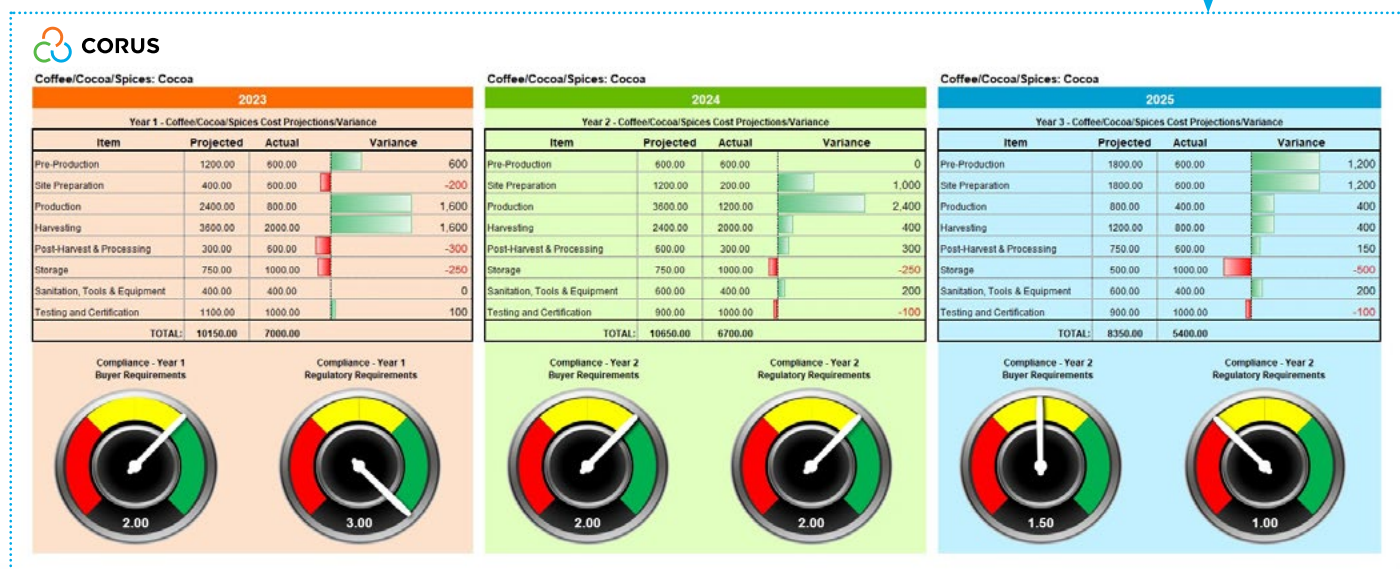


3 // DASHBOARD WORKSHEET

The next worksheet (from left to right) in the Costing Tool workbook the **Dashboard** worksheet. *You do not enter any information into the Dashboard worksheet. It updates automatically as you enter data into other sections of the Costing Tool workbook.*

The Dashboard worksheet includes the type of agricultural products, the Cost Line Items (Item) and the **Projected** cost (expenditure) for each Item. The column for **Actual** also updates automatically. It is the actual costs incurred after the expenditures are finished. The column for **Variance** is the difference between the **Projected** and the **Actual**. It will show whether the cost was overbudget or underbudget.

The two circles with the colors black, red, yellow, and green show the **Compliance Buyer Requirements** and the **Compliance Regulatory Requirements**. A farmer or farmer organization that has a circle with more green color showing is more compliant. Whereas a circle that shows more red color is less compliant. This also updates automatically as you enter data into the compliance sections later.



FARM COSTS SUMMARY WORKSHEET



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4 // FARM COSTS SUMMARY WORKSHEET

The **Farm Costs Summary** worksheet shows a summary of the three-year period for each year. It shows the total values and individual values of cost items for the **Projected Cost**, **Actual Cost** and **Variance**.

- The **Farm Cost Summary** provides a summary of the **Farm Costs** tab with the nine categories of: pre-production, site preparation, production, harvesting, post-harvest and processing, storage, sanitation/tools/equipment, certification, and the total.
- The **Projected Cost** information updates automatically as you enter data in the section for **Farm Costs** tab.
- The column for **Variance** shows the difference (positive or negative) for each of the Cost Items. At the start of the year the Variance will match the Projected Cost.
- At the end of the Year, e.g. in December 2023, go back into the spreadsheet and enter the Actual Cost incurred for each of the nine categories. This will show the **Variance** between Projected Cost and Actual Cost, either as a plus or minus.
- The column for **Remark** includes any remarks (comments) that have been entered into the Notes sections of the **Farm Costs**.

Three Year Cost Projections for Coffee/Cocoa/Spices: Cocoa

CORUS	2023				2024				2025			
	Projected Cost	Actual Cost	Variance	Remark	Projected Cost	Actual Cost	Variance	Remark	Projected Cost	Actual Cost	Variance	Remark
Pre-Production	1,200.00	600.00	600.00	Surplus	600.00	600.00	0.00		1,800.00	600.00	1,200.00	Surplus
Site Preparation	400.00	600.00	-200.00	Deficit	1,200.00	200.00	1,000.00	Surplus	1,800.00	600.00	1,200.00	Surplus
Production	2,400.00	800.00	1,600.00	Surplus	3,600.00	1,200.00	2,400.00	Surplus	800.00	400.00	400.00	Surplus
Harvesting	3,600.00	2,000.00	1,600.00	Surplus	2,400.00	2,000.00	400.00	Surplus	1,200.00	800.00	400.00	Surplus
Post-Harvest & Processing	300.00	600.00	-300.00	Deficit	600.00	300.00	300.00	Surplus	750.00	600.00	150.00	Surplus
Storage	750.00	1,000.00	-250.00	Deficit	750.00	1,000.00	-250.00	Deficit	500.00	1,000.00	-500.00	Deficit
Sanitation, Tools & Equipment	400.00	400.00	0.00		600.00	400.00	200.00	Surplus	600.00	400.00	200.00	Surplus
Testing and Certification	1,100.00	1,000.00	100.00	Surplus	900.00	1,000.00	-100.00	Deficit	900.00	1,000.00	-100.00	Deficit
Total:	10,150.00	7,000.00	3,150.00		10,650.00	6,700.00	3,950.00		8,350.00	5,400.00	2,950.00	



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CALCULATOR WORKSHEET



Overview

Farm Details

Dashboard

Farm Costs Summary

Calculator

Farm Costs

Compliance

Farm Costs

Compliance
TermsFood Safety
Resources

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FARM COSTS WORKSHEET



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6 // FARM COSTS WORKSHEET

Before entering data and information into the Farm Costs worksheet please go to User Manual section on Farm Costs Terms/Definitions and Compliance Requirements and review the descriptions. This will guide you on what terminology is used for each farm cost to enter the data and information for your farm or farmer organization correctly. The **Terms/Definitions** is available for each of the four agricultural product categories.

2

Step 2: Farm Costs Terms

Review the **Farm Costs** and **Compliance Requirements** tabs in the budget tool and **Farm Costs** and **Compliance Terms** in the **User Manual** associated with your agricultural products.

Step 2: Farm Costs Terms

Note, some of the Category Costs and Cost Line Items may not apply to your farm or farm organization. There are also some Cost Line Items that are important for food safety and should be included in every farm or farm organization cost. These items are listed in **gray color** with an **X** in the **Farm Costs Terms/Definitions** tab of the manual but are not included in the Food Safety First Costing Tool workbook because they are part of an overall farm management budget.

Some Cost Line Items differ depending on the type of agricultural product. Pay close attention to the differences as you go through the various terms.

EXAMPLE:

- Farmer A checks the Terms/Definitions in this User Manual for **High Value Horticulture** and becomes familiar with potential costs that are relevant to the farmer organization.
- Farmer A notes that some items are not relevant or applicable. Or have already been done by Farmer A's organization, such as fencing of sites, handling, washing, and inventory management.
- In this situation, Farmer A would not include those costs in his projected costs.



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Step 3: Strategize

Develop a strategy on how best to begin updating your farm/farmer organization to best comply with the industry standards for food safety.

Step 3: Strategize

The farmer or farmer organization can start to develop a strategy for how to begin complying with the industry standards for food safety in their country or for their buyer over a three-year period. Each farmer or farmer organization will identify the upgrades, practices, assets, or infrastructure needed based on their capacity, knowledge, and financial resources.

- Some farmers or farmer organizations may not find it feasible to make all the desired updates in a single year.
- It may be helpful for you to start with a few updates in Year 1 and plan on making additional updates in the next two years (Years 2 and 3).
- You can still identify the Cost Line Items for Years 2 and 3 now as you enter information into the Costing Tool workbook.
- Revisit the Costing Tool workbook each year to ensure that the costs have not changed due to inflation, supply chain issues, and other factors, and where costs have changed (increased or decreased in price) make the necessary changes to the Farm Costs columns.

Next, click on the **Farmer Costs** worksheet. Note, you are using the Costing Tool workbook for the agricultural product you farm, i.e. selecting from **Legumes/Grains; Horticulture (High Value); Coffee/Cocoa/Spices; and Livestock/Poultry**. You will find a list of Farm Cost Line Items. Go through each of these items under the Year 1 heading and put in the Unit Cost and Quantity for each item you plan for during Year 1. The Unit Cost is determined by performing your own analysis and research on the local market value cost for each item.

Use the **Calculator** tab to help assist you in determining the estimated costs for each sub-Cost Line Item when you type in all the elements that go into it.

The last step is to add to the **Actual Value** to the Farm Costs. This is the actual cost when you make the update on your Costing Tool workbook. It should come from your own farming budget at the end of the year, i.e. when Year 1 is complete.

EXAMPLE:

- Farmer A begins calculating costs for each relevant line item. Farmer A now knows that the organization needs clean containers and tools for harvesting the bananas and pineapples and uses the Calculator to help to calculate each total cost for the Farm Cost Line Items.

The **Projected Cost** column (in the Farm Costs Summary) will automatically calculate the total cost to implement each of the Farm Cost Line Items you have identified. It will automatically appear on your **Farmer Costs** and **Dashboard** worksheets to help you easily see overall costs.



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COMPLIANCE WORKSHEET



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7 // COMPLIANCE WORKSHEET

4

Step 4: Compliance

Update the compliance checklists.

Step 4: Compliance Worksheet

The purpose of the **Compliance Checklist worksheet** is to guide the farmer or farmer organization through the process of identifying each of the compliance items for their agricultural product. The **Compliance Checklist** is a method to rate the farm's performance each year over the three years. Depending on the buyer the farmer or farmer organization sells to, the food safety compliance requirements may differ. The farmer or farmer organization does not necessarily need to meet all the Compliance Checklist requirements. But this offers the farmer or farmer organization an opportunity to learn what the buyer wants and what may be needed to comply in the future over the three year period or longer.

This worksheet is divided into two broad categories of:

- (1) Compliance Checklist for Meeting Buyer Requirements
- (2) Compliance Checklist for Meeting Regulatory Requirements

At the top right of the worksheet there is a definition of the ranges for measuring your farm or farmer organization's compliance to (1) and (2). As you complete this section you will take a random sample of your product(s) to assess your farm or farmer organization's level of risk.

The **Compliance Definitions by Risk Matrix** is calculated using a score of 1, 2, or 3. It is possible the farm has a 2.3 rating, and if this is the case, enter that in the Notes section. This will provide you with a detailed record to refer to.

CORUS Compliance Definitions by Risk Matrix	
Risk Matrix Range	Interpretation
Risk Matrix Value: $2.01 \leq \text{value} \leq 3.00$	Compliant
Risk Matrix Value: $1.01 \leq \text{value} < 2.00$	Moderately Compliant
Risk Matrix Value: $0.01 \leq \text{value} < 1.00$	Not Compliant

3 = Compliant - Meaning the sample ALWAYS meets the standard

2 = Moderately Compliant - Meaning the sample SOMEWHAT meets the standard

1 = Not Compliant - Meaning the sample does NOT meet the standard at all

NOTE: this is the farmer or farmer organization's record. It is not the record of the buyer, processor, or aggregator/trader. Unless the buyer, processor or aggregator/trader is completing the Costing Tool for their own business purposes.



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It is helpful for the farmer or farmer organization to meet with the buyer(s) to ensure you understand their requirements. General **Compliance Indices and Compliance Variables** have been listed on each of these worksheets, but space has been allotted for you to add an additional requirement if you need it.

Enter the details for the **Compliance Checklist** for Year 1. If any the **Compliance Indices or Compliance Variables** do not apply to your agricultural product(s) please leave the line item scores blank.

Note, the Compliance scores update automatically into the **Dashboard worksheet**.

5

Step 5: Repeat and Additional Years

Update the information for each type of agricultural product produced on your farm. Complete each of the previous steps during your year 2 and year 3 farm/farm organization updates.

Step 5: Repeat

Repeat **Steps 5-6**.

Additional Years (Years 2 and 3)

Complete each of the previous steps during Year 2 and Year 3 for your farm or farm organization updates.

It is vital to ensure the data and information you enter reflects the status of your farm or farmer organization. As such it is necessary to go through Step 1 through Step 6 during year 2 and year 3 as well.



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TERMS AND DEFINITIONS FOR FARM COST ITEMS



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8 // TERMS AND DEFINITIONS FOR FARM COST ITEMS

This section of the User Manual provides:

- (1) **Farm Costs Item Definitions** provides detailed description and definition for every cost term provided in the Costing Tool excel spreadsheet. It is separated by the four agricultural products of:
 - a. Legumes/Grains
 - b. Horticulture (High Value)
 - c. Coffee/Cocoa/Spices
 - d. Livestock/Poultry

As you go through these Farm Cost terms those that are included in the costing tool are marked with a green checkmark ✓, and those not included in the costing tool are marked with a red ✗ and shown in a **dark gray** font.

- (2) Compliance Checklist Definitions provides a detailed description and definition for every compliance term provided in the Costing Tool workbook. It is separated by two areas:
 - a. Buyer Requirements
 - b. Regulatory Requirements

We advise you to review your country's and the importing country's local laws and requirements for food safety standards alongside using the Costing Tool and User Manual.

The **Farm Costs Terms** provide a detailed description of each of the Cost Line Items the farmer or farmer organization should consider to be compliant to food safety standards. These are the items used to populate the dropdown menus in each of the **Farm Costs** worksheet:

- Legumes/Seeds
- Horticulture (High Value)
- Coffee/Cocoa/Spices
- Livestock/Poultry

The Farm Cost Line Items vary based on the type of agricultural product being produced. Please refer to the next few pages for definitions of each of these safety measures. The definitions are unable to include every aspect. The farmer and farmer organization are advised to use their own judgement as it applies to their farm context and country.

There are some items that, although important for food safety, are not included in the list. Of note, this is because they are generally considered to be part of the normal costs of running a farm. There is a further explanation of what portion can be included in your Farm Costs (and Food Safety First Costing Tool workbook) and what portion goes into your general farm management budget.



FARM COSTS DEFINITIONS FOR AGRICULTURAL PRODUCTS

Review the following information for detailed definitions of each **Farm Cost Line Item** that you may select to enter for your farm or farmer organization.

Farm Costs Terms for Agricultural Products

This includes information that is generic for all four agricultural product categories – i.e. legumes/grains, coffee/cocoa/spices, high-value horticulture and livestock/poultry. There is additional and specific information for any of the agricultural products in each section to help guide farmers or farmer organizations.

Housing – Livestock/Poultry Only

This applies to Livestock/Poultry only.

Included Items

✓ Disease Control (Biosecurity)

- Biosecurity is the term used to describe a general strategy or a succession of measures used to prevent infectious diseases in a farm (disease control). Maintaining an effective biosecurity program, using good hygiene practices, and following a comprehensive vaccination program are essential for animal disease prevention.
 - The cost of developing a Farmer or Farmer Organization Biosecurity Plan is included in the food safety costing.

✓ Waste Disposal Sites

- This Farm Cost Line Item includes the cost of clearing or designating a safe and appropriate location to dispose of vaccines or medicines containers, if applicable.
- This might be at the community or farmer organization level and not at the individual farmer level. It might involve consulting with an external entity that collects vaccines or medicines for transport to a safe disposal site away from the farm. Such as to a municipality or district managed waste disposal site.

✓ Clean Water for Animals

- Clean, fresh, cool water is essential for health and production performance. It encourages healthy systems, inside and out, as well as stimulating feed intake. Keep water troughs and tanks clean — use fish or chlorine tablets and a scrub brush. Keep plant material out of water — some plant material is toxic.
- Clean water for animals is not included in the food safety costing.
- Note, Clean Water for Processing of food stuffs is a food safety compliance issue and is included in the Costing Tool workbook.

✓ Fencing of Site

- Fencing is used to keep livestock, goats, sheep, and poultry separated from humans, waste disposal sites, and unclean water and food.
- This is not included in the food safety guidance tool as it is usually budgeted for in the farmer/farmer organization's overall farm management budget. Except for fencing the waste disposal sites, which is included in the Costing Line Item - Housing Waste Disposal Sites



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Excluded Items**✗ Ventilated Housing**

- Animal shelters should be open, providing natural ventilation, or enclosed, using fans and proper air inlets around the ceiling perimeter to provide good air circulation. Tight buildings result in a buildup of respiration gases, and animal odors, which can irritate the animal's lungs and cause pneumonia. Dangerous ammonia levels can also build up and lead to suffocation death of animals and their caretakers.
 - The costs associated with ventilated housing would be budgeted separately in the farmer or farmer organization's usual farm budget.

✗ Animal Housing Sanitation

- Clean pens and barns by removing dirt, feces, and stagnant water from the area. When disease problems surface, clean barn walls with disinfectants. Let the sunshine in if possible. Chlorine or other commercial disinfectants are helpful.
 - The costs associated with this would be budgeted separately in the farmer or farmer organization's usual farm budget. The sanitary disposal of animal waste and costs associated for setting up a designated area for waste management. There is a separate term and expenditure for waste disposal sites which is a food safety costing cost.

Pre-Production

This refers to legumes/grains, coffee/cocoa and spices and high-value horticulture, and not livestock/poultry.

Included Items**✓ Training in Integrated Pest Management**

- Integrated Pest Management (IPM) is an ecological approach to pest control, based on the life cycle and habitat of the pest. It combines all appropriate pest management techniques into a single, unified program or plan. The goal of any IPM program is to reduce pest populations to an acceptable level in a way that is practical, cost-effective, and safe for people and the environment. IPM also removes or reduces the application of chemical agro-chemicals on agricultural products.
- The **Farm Costs** worksheet allows for farmers and farmer organizations to plan and estimate costs for providing themselves and/or their workforce (employees, seasonal workers, others) guidance materials and/or information for trainings.
 - Note, this includes purchase of materials or assets, e.g., tarpaulin sheets, plastic containers, etc. You can also estimate costs related to Post Harvest Handling (tarpaulin sheets), transportation, storage here.

✓ Cadmium Levels (Cocoa Production)

- A cocoa farmer or farm organization must be ready to provide their buyer with a laboratory analysis of the cadmium levels in their cocoa beans. The maximum levels of cadmium in certain foodstuffs (Regulation (EC) No 1881/2006) apply to finished products but have implications for suppliers of cocoa beans whose cocoa product exceeds the acceptable cadmium level. The farmer or farm organization should allocate costs for testing cadmium levels in the soil.

Excluded Items (none)



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Site Preparation

Site Preparation entries are for all of the agricultural products, except livestock/poultry worksheet which does not have Site Preparation included.

Included Items

✓ Farmland Sanitation

- During site preparation, cleaning and disinfection processes are important to prevent transmission of infectious agents to seeds and consequently the crops, including legume and grain crops, high value horticulture and coffee, cocoa and spices. Ensure sites are free of microbial contaminants or pesticide run-off from fields affected by contaminated water sources.
- See <https://sanitationupdates.files.wordpress.com/2010/11/microbiology2020.pdf> for guidance and contact your country's Environmental Protection Agency for additional information on the steps required and costs associated with ensuring your farm does not have microbial contamination.

✓ Waste Disposable Sites

- This Farm Cost Line Item includes the cost of clearing or designating a safe and appropriate location to dispose of waste materials and/or agro-chemicals.
- This might be at the community or farmer organization level and not at the individual farmer level. It might involve consulting with an external entity that collects waste/agro-chemicals and containers for transport to a safe disposal site away from the farm. Such as to a municipality or district managed waste disposal site.
- Dispose of extra or out of date agro-chemicals and empty containers in a manner that does not pose a hazard to humans or the environment. Follow label directions and consult your local agricultural extension agent or Environmental Protection Agency representative in-country if you have questions.
- Of note, the use of agro-chemicals (e.g. pesticides, fungicides) or fertilizers that can leave a chemical residue has stringent requirements to meet the safe use of it during production, harvesting and post-harvesting/processing phases. (Note, fumigation during storage and warehousing also has stringent requirements and practices and is covered in the storage section). These requirements are included in many certification standards. They impact the sale of agricultural products to end markets, especially a high value export market such as sesame or horticulture products that must meet sanitary and phytosanitary standards (SPS).
- Farmers, farmer organizations, and firms (including traders, processors, and buyers) must always use production, harvesting or post-harvesting agro-chemicals in accordance with the instructions.

✓ Fencing of Site (applies to the High Value Horticulture worksheet)

- Farmers and farmer organizations may be able to fence off their **horticulture** production sites. This is costly and, in most cases, impractical for the farmer.
 - Fencing is a key element in biosecurity management.
 - For small horticulture plots of intensive high value horticulture can apply and be costed in this Farm Cost Line Item.
 - Site protection or fencing will prevent intruders such as human beings and animals who have the potential to contaminate crops.



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Excluded Items**✗ Certified Seed**

- Use of safe, uncontaminated seed will ensure food safety. Certified seed varieties can be open pollinated, hybrid or Genetically Modified Seeds (GMO). The farmer and farmer organization need to be clear on what type of seed they are using, and that it adheres to their end market buyer, the regulations of their Ministry of Agriculture, and/or their household personal preferences of choices.
- Seeds are important for seed quality and can have some impacts on human health. They can also be impacted by the food standards allowed for consumption or export in countries. It does not have a direct relation to food safety and should be budgeted in the Farm Management Budget, not the Costing Tool workbook.

Production – Livestock/Poultry Only**Included Items****✓ Farm Sanitation (Livestock/Poultry)**

- All the cleaning and disinfection processes in the farmhouse (Farm Costs Line Item) are performed to stop the transmission of infectious agents during the production stage. This includes the costs related to purchasing cleaning or disinfection equipment, products or materials.

✓ Safety Personal Protective Equipment (PPE) and Training

- Food handlers may contaminate agricultural products during the handling of livestock/poultry and/or meat, milk, or egg products. So, care must be taken to ensure that no illness is passed on by those working in the industry. Workers must be given training and refresher on personal hygiene.
- Never smoke, eat, chew tobacco, or use snuff while handling or applying pesticides. Use the protective clothing and equipment the label requires. Always protect your eyes from pesticides. Avoid inhaling sprays or dust. Do not spill agro-chemicals / pesticides on skin or clothing. If they are accidentally spilled, remove contaminated clothing immediately and wash exposed skin thoroughly. Wash hands and face and change to clean clothing after applying pesticides. Wash protective clothing, separate from the family laundry, each day, before re-use.
- This Farm Costs Line Item includes the costs of safety clothing and equipment (e.g., plastic shoes/boots, gloves, hats, masks, protective eyewear, printing materials and posters to instruct food handlers on the proper procedures the etc.) and training farmer organization or firm staff on the right use of personal protective equipment when handling and processing horticulture products for the end market buyer.

✓ Vaccines & Medications

- Livestock should be on routine vaccination and parasite control programs. There are many types of vaccinations against viral and bacterial infections (initial and booster), and many types of parasite control programs against numerous parasites and diseases.
- The farmer and/or farmer organization must make sure s/he/they work with a veterinarian and read product labels, so medicines are used and stored properly (e.g. temperature, duration, clean needles, correct injection site, proper dosage used, and amount per injection site, etc.). The safe disposal of plastic syringes and unused vaccines and medications is essential and is inaccessible to children, especially.
- This cost is not included in the food safety costing as it will be part of an overall farm management budget and plan.

✓ Disposal of Animal Carcass

- The proper and safe disposal of dead animals must follow the guidelines of your country's government veterinary department. This includes assigning a pre-designated area that will not contaminate water systems or seep into the ground where food crops are grown. The use of an abattoir is ideal.
- This cost is included in the food safety costing.

Excluded Items (for Livestock/Poultry)

✗ Acquisition of Healthy Breeds

- These are breeds of livestock without trace of diseases to the parent stock.

✗ Feeding

- Feeding livestock means edible material that is consumed by an animal and contributes energy, nutrients, or both, to the animal's diet.

✗ Veterinary Services

- Use of veterinary services for the care and treatment of animals/livestock in an at-farm arrangement. Can include administering vaccines, medications or conducting minor medical procedures. This is not included in the Farm Costs for food safety cost unless it is related to the safe handling and disposal of vaccines and medications.

Production – Legumes/Grains, Coffee/Cocoa/Spices and High-value Horticulture

Included Items

✓ Seed Treatment

- Seed dressing and/or treatment is the process of covering the seed with a protective layer for soil-borne pest control, prevent mold, and to maintain germination of the seed.
- A farmer or farmer organization who directly treats the seed they plant and purchases the seed treatment can include the costs of the seed treatment in the Farm Costs Line Item. Stored **cocoa seeds** that have had domicile aging conducted can incur additional costs that the farmer or farmer organization should consider in this Farm Cost Line Item.
- The use of inoculum is important to standardize fermentations of cocoa and to improve final seed quality. Farmers and farmer organizations should be aware that the amount of inoculum present during fermentation of cocoa can affect the quality of the cocoa pulp.
- If the farmer or farmer organization does not carry out this practice, the Seed Treatment will be blank in the Farm Costs Cost Line Item.

✓ Land/Crop Rotation

- Crop rotation can preserve the land, improve soil quality, and reduce the risks of pests, diseases, or contamination between agricultural products. Land can also remain fallow for periods. The crop rotation schedule can be documented and shared with end market buyers, as applicable. The farmer or farmer organization cost to develop a crop rotation schedule is included in the Farm Costs worksheet.



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✓ Safety Personal Protection Equipment (PPE) and Training

- Never smoke, eat, chew tobacco, or use snuff while handling or applying pesticides. Use the protective clothing and equipment the label requires. Always protect your eyes from pesticides. Avoid inhaling sprays or dust. Do not spill agro-chemicals / pesticides on skin or clothing. If they are accidentally spilled, remove contaminated clothing immediately and wash exposed skin thoroughly. Wash hands and face and change to clean clothing after applying pesticides. Wash protective clothing, separate from the family laundry, each day, before re-use.
- The costs of purchasing Safety PPEs (Personal Protective Equipment) can be included here and/or in the Post-Harvesting and Processing - Personal Protective Equipment and Training Costing Line Item.
- Costs associated with training farmer organization members, employees or workforce are included in this Farm Cost Line Item.

✓ Clean Containers

- For High Value Horticulture and Coffee, Cocoa and Spices only.
- This includes the purchase of harvesting containers and keeping them clean when storing seeds or seedlings for use in planting or during production.

Excluded Items

✗ Farm Sanitation

- All the cleaning and disinfection processes that are performed to stop the transmission of infectious agents during the production stage.

Harvesting

The Farm Costs associated with Harvesting are not applied to livestock/poultry.

Included Items

✓ Hygiene for Harvesters/Workers

- Never smoke, eat, chew tobacco, or use snuff while harvesting. Wash hands before starting to pick. If appropriate use protective clothing and equipment. Ensure that no part of the agricultural product has come in contact with animal or bird feces; watch for signs of animal waste in nearby areas. Only harvest agricultural products that are on the plant or tree (not on the ground). Harvesters / Workers should remove soil before putting agricultural products in harvest or storage containers or on tarpaulin sheets.

✓ Sanitary Training for Infrastructure and Logistics

- Good sanitation practices on the farm premises and infrastructure prevents harvested produce from becoming contaminated. General good practices to follow include:
 - Training workers on personal hygiene and cleanliness and keep it clean (i.e. sweep, pick up and safely dispose of trash, and remove produce waste piles from buildings at least daily).
 - Separate produce handling areas from other farm activities.
 - Establish harvest, post-harvest, and processing pest management programs.
 - Provide proper latrine and hand washing facilities (cost covered later)
 - Arrange designated rest areas for employees and farm visitors.
 - Minimize standing water.
 - Transport legumes and grain products in thoroughly cleaned and sanitized trucks. Ensure no mixing of produce in the same truck.



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- If the farmer or farmer organization arranges for a truck to transport their agricultural products the transport must follow the right protocols and standards to be compliant to food safety requirements, especially if the agricultural product is for an export market.
- This Farm Costs Line Item includes the costs associated with hiring external experts to train your workforce on the proper sanitation procedures.

- Design your sorting, grading, and drying areas, or storage facility layout to prevent contamination. This differs by agricultural product.
- With **cocoa** agricultural products, the facility needs to have an area designated to fermentation practices. In Latin America this is often done in a box (called box fermentation). Whereas in Africa it is often done in a heap (called heap fermentation). Depending on the farmer or farm organization, the beans can be delivered wet to a central fermentation center at the farmer organization (or cooperative) level. This requires clean buckets to collect and store the wet cocoa beans prior to fermentation occurring.
- After the fermentation process, the farmer or farmer organization needs to assign a designated area in the facility to dry the cocoa on raised beds, which is an additional cost. After this the cocoa is bagged and stored.
- With **coffee** a similar process to the above (for cocoa) occurs. The cherry collection centers for wet cherries is designated to one area of a facility. There are also washing stations, drying stations, and areas for sorting. The equipment costs for setting up the appropriate facility are included in the Farm Costs Line Items.

✓ Containers and Tools

- Using clean containers and tools can decrease post-harvest losses on sensitive agricultural products, especially for high value horticulture and spices products such as tomatoes, chili peppers, and vanilla. It also reduces the chance of spreading foodborne illness-causing pathogens.
- All reusable harvest containers and tools should be kept clean and sanitized. Sanitize reusable bins, buckets, totes and other contains of excess soil, vegetable matter and other debris. Discard, and buy new containers, tools, and pallets when they are no longer cleanable.
- This Farm Cost Line Item includes the costs of purchasing new containers and tools.

✓ Damage and Contamination Control

- During harvest look for ways to reduce contamination of produce. Harvest tools, bins, harvesters, and the environment are all potential sources of contamination. Just before and during harvest take time to look for conditions that might affect produce safety.
- Be aware that harvesting involves a lot of hand contact and taking measures to prevent contamination of produce by the employees and workforce.
- Broken, insect-damaged or infected harvested crops are susceptible to microbial, viral, and bacterial infections and consequent mold, such as aflatoxin which is a human food safety concern. It is important to avoid this during harvesting (as well as post-harvesting, processing, or packaging).



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- Be sure to ensure that the right protocols and conditions are in place for managing the harvesting (post-harvesting, processing, and packaging) phases of farm operations. These are included in HACCP and GMP management practices (See Resources Page for more details).
- This Farm Costs Line Item includes the costs for properly disposing of damaged crops following safety protocols, such as designated area, cost of removal such as transportation costs, etc.

Excluded Items (None)

Post-Harvest & Processing

Included Items

Please note that for the Livestock/Poultry Worksheet the costs included are only Transportation, Cleaning and Disinfecting and Use of Clean Containers.

✓ Safety Personal Protective Equipment and Training

- Food handlers may contaminate agricultural products during grading and sorting of agricultural products. So, care must be taken to ensure that no illness is passed on by those working in the industry. Workers must be given training and refresher on personal hygiene.
- This covers the costs for printing materials and posters to instruct food handlers on the proper procedures, the budget cost of safety clothing and equipment (e.g., plastic shoes/boots, gloves, hats, masks, protective eyewear, etc.).
- This Farm Costs Line Item also includes the cost of training farmer organization or firm staff on the right use of personal protective equipment when handling and processing horticulture products for the end market buyer.

✓ Post-Harvest Technologies

Note, this applies to legumes/grains, horticulture, and cocoa/coffee/spices worksheets, and not livestock/poultry.

Post harvesting handling is the stage of agricultural crop production immediately following harvest, including pre-cooling, cooling, cleaning, sorting, and packing. The instant a crop is removed from the ground, or separated from its parent plant, it begins to deteriorate. Post-harvest treatment determines the final quality and marketability.

This Farm Costs Line Item includes the costs associated with cooling/chilling the product during transportation from the field to its destination (whether market, storage facility, packing or processing location, or to the buyer).

- Hand harvesting, harvesting with hand tools and harvesting with machinery are the three harvesting methods. Using advanced technologies reduces the wastage of agricultural products and increases the quality, quantity, and shelf life.
- A pre-cooling process before transporting and storage is necessary to remove field level temperature for **high value horticulture** (fruits and vegetables). This includes cooling, cleaning, sorting, and packing.
 - Small stationery or mobile cooling/chilling technologies are becoming available for short-term storing of harvested fruits or vegetables at the field prior to moving it to a central hub, storage facility or to the buyer premises.
 - The dairy sector relies on chilling stations or hubs to bring milk to the right temperatures. This cost is included in Cold Chain Transportation below.

- This Farm Costs Line Item is the cost for installing and maintaining cooling and chilling facilities either at the field or on the farm premises.
- This Farm Costs Line Item includes the purchase of technologies and/or small equipment such as tarpaulin sheets, plastic containers, at field pre-cooling site, at-field shade coverage, etc, which is important for high value horticulture and some types of spice products. It does not include training provided to farmers, farmer organizations or workforce to use the technologies.

✓ Grading, Sorting and Packing in the Field and in Facilities

- This is the grading and sorting are activities where the farmers or farmer organization differentiate the agricultural product according to quality specifications.
- For **high value horticulture** agricultural products, the grading and sorting stage puts the horticulture products into different grades according to size, shape, and quality as per certification standards and buyer specifications.
- Bruised, broken or damaged harvested **coffee, cacao and spices** are susceptible microbial, viral, and bacterial infections and consequent damage or rotting. It is important to avoid this during harvesting (as well as post-harvesting, processing, or packaging). Sorting and separating out the damaged, non-damaged or diseased and non-diseased and mature coffee, cocoa or spice products is necessary. Solid or non-damaged coffee, cocoa pods, or spices want removing.
- This Farm Costs Line Item includes the costs of purchasing grading and sorting equipment, packaging materials, including product labels.

✓ Transportation

- **Livestock/Poultry** includes two Farm Cost Line Items of Cold Chain Transportation, Safety Personal Protective Equipment and Training. The other Farm Cost Line Items apply to **legumes/grains, high-value horticulture, and coffee/cocoa/spices**.
- Food transportation is the process of moving food to desired destinations. Transportation from the field (farm) to a centralized storage facility needs to be carried out in clean vehicles and/or tractors and trailers, or a central hub location, preferably shaded to avoid exposure to the sunshine which can damage agricultural products post-harvest, especially horticulture or spices. Milk products spoil quickly if not chilled.
- During transporting the agricultural products, e.g. **coffee beans, cocoa pods and spices** (e.g. wet or dry method with coffee, fermentation for cocoa, and drying or fresh with spices) the food safety and quality is maintained. The vehicles and transportation equipment used must be adequately cleanable and suitable.
- This Farm Costs Line Item covers the cost of purchasing new transportation equipment or vehicles and/or processing equipment. It is not expected to be a yearly occurring cost, but a large investment into the farm operations or farmer organization.

✓ Fermentation and/or Drying

- Fermentation applies to cocoa agricultural products; drying refers to coffee, cocoa and spice agricultural products.
- The process of fermenting cocoa, or drying the coffee or spices on racks, trays, on the ground is a necessary process to avoid the formation of mold in the products. etc. Use of clean concrete, preferably with tarpaulin sheets, etc.



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✓ Washing

- The Farm Costs for Washing apply to High Value Horticulture and Coffee/Cocoa and Spices only.
- Keep all equipment, tools, containers always clean. Wash and clean equipment after every batch is processed and at least at the end of every workday. Implement and follow training programs and hygiene policy.
- At the processing and packaging phases (some) **high value horticulture products** are washed using clean water, dried, sorted, graded, discarded, packed, and stored. This process requires the supply of clean water from sources such as boreholes, piped water, or potable water to wash the horticulture product, and clean food-contact surfaces and equipment.
- Wash **coffee beans or cocoa beans** on clean equipment. Preferably use potable water to wash product and all product-contact surfaces and equipment.
- This Farm Costs Line Item refers to costs for supplying clean water to the premises/factory or farm.

Excluded Items (none)

Slaughter – Livestock/Poultry Only

Included Items

✓ Cleaning and Disinfection

- Ensure a controlled environment that complies with manufacturing management standards, certification standards, and animal meat and slaughterhouse standards and regulations for the country. Disinfect the place of slaughter to reduce or avoid infection. Eliminate germs on surfaces and slaughterhouse equipment. This applies to individual farmers, farmer organizations, butchers and traders who slaughter animals in the backyard, which occurs even if not supposed to.

✓ Equipment

- Purchase of appropriate food safety and slaughter equipment that allows for the humane and clean slaughtering of animals.

✓ Safety Personal Protective Equipment and Training

- Provision of the required personal protective equipment and clothing during the slaughter process for workers. This is a similar description to the earlier description but refers only to the members of the farmer organization, employees, or workforce who work in the slaughterhouse, or are involved in the slaughtering of animals.

Excluded Items (none)

Storage

Included Items

These costs apply to **High Value Horticulture, Spices, and Livestock/Poultry**.

✓ Refrigerated Storage Facility

- For horticulture and spice products there are pre-cooling processes to remove field level temperature. The refrigerated storage helps cool or chill the agricultural products while in storage. It also helps to ensure the right levels of temperature are maintained. For milk products, this is very important.
- This Farm Costs Line Item can be an expense of a farmer organization, processor, or buyer.

✓ Preservatives

This applies to **High Value Horticulture and/or Spices, only**.

- Preservatives serve as antimicrobials which prevent or slow down the growth of molds, yeasts, and bacteria. By preventing the growth of molds, yeasts, and bacteria, preservatives can improve the safety of food as well as prevent the wastage of seasonal surplus by making it last longer on the shelf or in the fridge.
- Note, this is a specialized area that requires additional technical expertise and advice on estimates costs.
- Farmers and farmer organizations that purchase preservatives for this purpose can include this cost in the Farm Costs Line Item.

✓ Storage Facility Hygiene

This includes all four agricultural products worksheets.

- The temperature and humidity levels in a storage facility are important to maintain. The farmer or farmer organization must have be able to cool or dry the storage facility, room or warehouse to avoid the growth of molds, bacteria, or insects.
- Simple venting systems such as roof and side vents, use of plastic tarpaulin sheets, or use of fans increase the airflow. The farmer or farmer organization can also use proper spacing for air ventilation between stacks (of bags) of commodities. It ensures access for inspection and treatment in the inner areas of storage facilities where mold may grow or where pests may reside. Increasing the access to sunshine (for drying) or shade (for cooling) can help.
- The hygiene of the storage facilities (e.g. cold rooms, chilled rooms, warehouse, sheds, etc.) must be free from rodents or other pests that could contaminate or reduce the quality of the stored agricultural products. Always maintain a clean environment that is free of clutter and debris. Include the purchase of brooms, dustpans, pallets in this Farm Costs Line Item
- Spices must be stored in cool, dark and dry conditions, e.g. refrigeration units. Avoid moisture being absorbed into the spices as that poses a health hazard and promotes mold growth. It helps to ensure the right levels of temperature and oxygen/carbon dioxide levels are maintained. Ventilation can help in this aspect.
- For cocoa beans there are processes involving fumigation at the storage facility level.
- This Farm Costs Line Item is an expense of a farmer organization, processor, or buyer. The costs can include those mentioned above in addition to purchase of simple thermometers or digital humidity equipment.



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This Farm Cost Line Item also includes the proper use of safety personal protective equipment and clothing when entering a storage facility.

- It can include the training and monitoring of farmer organization members, employees, or workforce to use hygienic and food safety practices for storage facility management. The instructions to follow can include printed guidance materials.
- This Farm Costs Line Item cost refers to the cost of small equipment and/or disinfectants to maintain a hygienic storage facility.

✓ Packaging and Labeling

- Packaging is the science, art and technology of enclosing or protecting products for distribution, storage, sale, and use. Labelling is the display of label on a product. A label contains information about a product on its container, packaging, or the product itself. Labelling can include types of agricultural product, size, bar codes, expiry dates, country of origin, branding, etc.
- **Cocoa** beans are traditionally shipped in jute bags. These bags weigh between 60 and 65 kg. In the mainstream market, bulk shipment of cocoa beans has become more popular. This means cocoa beans are loaded directly into the ship's cargo hold or in shipping containers containing a flexi-bag. This "mega-bulk" method is often adopted by larger cocoa processors, which handle cocoa beans of standard qualities.
- In the fine flavor and specialty **cocoa** segment, jute bags are still commonly used. For very high-quality micro lots, vacuum sealed GrainPro packaging can be used.
- Contamination by foreign matter like plastic and insects is a risk when food safety procedures are not carefully followed. For example, mineral oil residues (MOSH and MOAH) have been found in chocolate in Germany. These residues can be derived from materials like recycled paper and treated jute bags for cocoa packaging. However, the European Union currently has no specific legislation on this, which does not mean that products cannot be rejected by a buyer due to the presence of foreign matter.
- This Farm Costs Line Item allocates costs to the cost of food-grade packaging materials (especially for the **high value horticultural** products and/or **milk or meat products**) to be ready for the end market buyer and/or consumer. The cost of labels can be paid for by the farmer or farmer organization and/or the buyer, or a shared cost across both.

✓ Inventory Management

- Inventory management is the accounting of items, component parts and raw materials that a company either uses in production or sells. The cost of purchasing an inventory management record keeping system is part of food safety control systems and ensures the proper management of food in the storage facility.

Excluded Items (none)



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Sanitation, Tools & Equipment

Included Items

✓ Latrines and Handwashing Stations

- A farmer organization or firm with employees and a workforce and operating a processing or packing operation and/or storage should provide handwashing stations and latrines for its workforce to follow good sanitation practices. The costs of installing latrines and handwashing stations on site can be included.
- Preferably latrines will be gender-sensitive, clearly marked, and accessible for the users. Latrines will be located far away from the commodity handling and storage area, and ideally equipped with sanitary products, disposal bins, soap and hand sanitizer and clean water.
- Ensure that workers have ready access to clean latrines and handwashing stations that utilize clean, potable water.
- This Farm Costs Line Item covers the cost of installing latrines and handwashing stations.

✓ Containers and Tools

- Clean containers and tools decrease the contamination of agricultural products and reduce the chance of spreading foodborne illness-causing pathogens. Sanitize tools and equipment frequently using a weak bleach solution. This includes reusable produce bins, buckets, totes, and other containers that should be cleaned of excess soil, vegetable matter and other debris. Tools should be cleaned daily or as needed to keep them clean.
- The cost of sanitation containers, tools and cleaning solutions can be included in the budget.

Excluded Items (none)

Testing and Certifications

Testing for food safety compliance is a scientific-based method that evaluates the safety of food based on microbiological, physical, or chemical composition. A certification in food safety can mean that an individual or a member of a farmer organization has a basic knowledge of the causes of foodborne illness and its prevention, has passed an approved examination, and possesses a valid certificate in food safety.

The **types of certifications** vary according to agricultural product type, processing, and end market buyer (e.g., domestic, regional, or international trade). Regulations aim to protect the importing country from the unauthorized entry of animals and plants that could harm existing crops or carry diseases.

- For **cocoa**, the sanitary and phytosanitary standards (SPS) requirements may include: moldy beans, low cadmium levels or cocoa free of live insects (cocoa moth) To address this the farmer, farmer organization, processor, buyer or importer may be required to fumigate the cocoa to kill this pest (see <https://intracen.org/media/file/3013> for details).
- **Coffee** importers and processors are regulated by inspectors to ensure mycotoxins (e.g. Ochratoxin A) in coffee does not occur (see: <https://intracen.org/media/file/5718>).
- This certificate is more likely to be associated with the buyer requirements, e.g. Organic certification, than a food safety management standard, such as HACCP, ISO9000, etc. Please see Food Safety Resources section for details of types of certificates and management standards.
- This Farm Costs Line Item covers costs for tests and certificates that help farmers and farmer organizations adhere to processor, buyer and importer requirements.

Excluded Items (none)

TERMS AND DEFINITIONS FOR COMPLIANCE CHECKLISTS



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9 // TERMS AND DEFINITIONS FOR COMPLIANCE CHECKLISTS

Compliance Checklist Terms

The purpose of this section is to help farmers and farmer organizations to identify how compliant they are with the food products they produce and sell.

The **Compliance Checklist** is a list of terminology with a brief description. It is divided into two main sections of:

- (1) Compliance Checklist for Meeting Buyer Requirements,
- (2) Compliance Checklist for Meeting Regulatory Requirements.

Under each main section it is divided into:

- (1) **Compliance Checklist for Meeting Buyer Requirements** includes Product Quality Control; Preservation; Labelling and Packaging; Sanitation and Hygiene; Price; and Contamination.
- (2) **Compliance Checklist for Meeting Regulatory Requirements** includes Auditing; monitoring; enforcement of laws/policies; analysis; standards and protocols; checks and codes; scheduling; standards and protocols; and training/awareness.

A farmer or farmer organization is not necessarily going to know all this information. Try to complete the Compliance section of the Costing Tool as best as you can. As you practice and become familiar with the compliance terminology it will become easier to complete.

The **Compliance Checklist Terms** are the items used to populate the dropdown menus in the Compliance tabs for each of the agricultural product types:

- **Legumes/Seeds**
- **Horticulture (High Value)**
- **Coffee/Cocoa/Spices**
- **Livestock/Poultry**

These are divided into two sections: Compliance Checklist for Meeting Buyer Requirements and Compliance Checklist for Meeting Regulatory Requirements. A detailed explanation can be found in this manual under the Compliance Checklist tab.

The next few pages will show each of the terms listed in the checklists as well as their definitions. The terms and definitions were acquired through extensive research on general buyer requirements for the various agricultural product types as well as research into the various regulatory requirements. The checklists indicator examples of some of the commodities. Each farmer and farmer organization must clarify their buyers' requirements, and the requirements of any certifications they have. As well as their country and the importing regulatory requirements. This applies to legumes/grains, high value horticulture, coffee/cocoa/spices and livestock sectors. The following pages describe and guide you to understand what to consider. It is not an exhaustive list. "Other" refers to any compliance checklist items that are not listed.



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COMPLIANCE CHECKLIST TERMS

Buyer Requirements: Review the following requirements your buyer may require for the agricultural products you supply. Each farmer or farmer organization assigns themselves a score based on their knowledge of how compliant, moderately compliant, or not compliant they are at meeting the buyer requirements. The score is between 1-3 points for each term:

1 point = non-compliant; **2 points** = moderately compliant and **3 points** = compliant.

Compliance Checklist for Meeting Buyer Requirements Terms

The following are a brief description of the terms for each of the compliance checklists.

PRODUCT QUALITY CONTROL

External Factors Such as Appearance (Size, Color, Shape and Consistency)

All external factors of agricultural food products that ensure the acceptability or otherwise of the product. This includes the size of the agricultural product as it relates to meeting the buyer standards, i.e. a Grade A pineapple would be the best pineapple and meet the size, color, shape, quality and consistency required.

Smell, Flavor, Odor, and Taste

The smell of the agricultural product helps to identify whether the food product is in good condition or not. Food is in good condition when its smell is the acceptable standard of that food. The flavor (odor and taste) plays a vital role in finding food, discriminating it from toxic substances, and appreciating its flavor.

Texture

Texture refers to those qualities of food that can be felt with the fingers, tongue, palate, or teeth. Texture is also an index of food quality, that can change in post-harvesting handling, processing, packaging, and storage stages. Texture is used to measure the quality and freshness of food products. Texture is a key quality parameter used in the fresh and processed food industry to assess consumer acceptability.

Among the texture characteristics, hardness (firmness) is one of the most important parameters, which is often used to determine the freshness of food. Springiness, cohesiveness, adhesiveness, and gumminess are significant properties for the texture evaluation for meat-based products.

Consumer concern and interest in food texture vary from one type of food to another. For solid foods, sensory experience associated with fracture and breaking could be the most relevant textural features, whereas the sensation of flow behavior could be the most critical texture-related feature for fluid foods. For semisolid or soft solid foods, different patterns of stress-strain deformation provide key information for the delicate texture variation among this type of food.

Other

Enter any other factors of product quality control that the farm or farmer organization must meet for their buyers.



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PRESERVATION

Prevention of Contamination

Specifically, preservatives help to control and prevent the deterioration of food, providing protection against spoilage from micro-organisms (e.g., bacteria, yeast, molds), life-threatening botulism and other organisms that can cause food poisoning (antimicrobial function).

Pre-Cooling Phase

This includes at the field level with the use of shading, small containers or rooms used to immediately cool or chill the agricultural product after it is removed from the field.

Removal or Reduction of Microorganisms

Preservatives can act to reduce microbial activity and may, like salt, function as a hurdle to microbial growth and survival. Some additives may also play a role in preserving food quality by reducing undesirable chemical reactions, such as lipid oxidation and enzymatic browning.

Washing and/or Fermentation (Cocoa, Coffee)

As described earlier in the Farm Cost Line Item terms.

Drying Platform/Stations

This includes drying the agricultural product to the right moisture level and/or condition as required by the buyer. Buyers of **legumes and grains** require a certain moisture level for the food to be safe. This simple action inhibits the growth of bacteria, mold, and yeast. Moreover, it slows down the enzyme action without deactivating them. For example, maize must be 13% moisture level or less to comply with buyers' requirements. Anything higher puts the maize at risk of aflatoxin, which has a direct impact on human health if consumed. Drying the legume or grain dehydrates or removes moisture from the agricultural product.

Other agricultural foods can be sterilized food is heated to a moderately high temperature, for example 112 °C for an hour, or a slightly higher temperature, for example 121 °C for 3 minutes. This treatment eliminates all pathogenic bacteria in food, but this would usually occur in processing stages and not carried out at the farm or farmer organization site and does not usually apply to legumes or grains.

Storage Bags for Agricultural Products

Cocoa/coffee/spices storage bags or legume/grains storage bags. This includes using storage bags properly to store the agricultural product.

Farmers or farmer organizations that use these correctly are adhering to better post-harvest handling practices and help to keep the legumes or grains free of pests, diseases, moisture, wind or different temperatures.



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Correct Labeling

Food labels provide essential information to consumers and assist them in making informed purchase decisions. Food labels include the source, country of origin, batch number, sale by date and other important information for the buyer and consumer. The label not only is a means of communicating the contents of a container to a consumer but can also provide critical information to a food allergic individual. The nutrition information contained in the label conveys data on calories and key macro- and micronutrients that can help consumers to prevent obesity and ensure adequate intake of nutrients commonly under consumed.

Remove Ambiguous Statements on Labels - Statements on labels and packages should be clear and readable. claims that are ambiguous, misleading, or irrelevant, or that cannot be substantiated should not be used.

Products Properly Packaged and Sealed

Ensure agricultural products are properly bagged, packaged and sealed during post-harvest handling, storing or packing phases.

Batch Numbering

A batch number is a designation given to products made in the same manufacturing run. A batch number can consist of numerals, letters, or symbols. The batch number can be used to track products with a common defect or with the same expiry date and determine the location of the products in question.

Use of Clean Containers

Packaging and labeling in food service can be just as important as the product inside the container. Packaging materials and labeling styles play a key role in branding a food product and adhering to food safety guidelines and regulations. Clean and good packaging materials or containers create a barrier from physical, chemical, light and biological hazards.

Other

Enter any other factors of product quality control that the farm or farmer organization must meet for their buyers.



SANITATION AND HYGIENE

Establish and Maintain Sanitary Facilities

The term “sanitary facilities” refers to toilets, handwashing stations, and other places where human wastes may be present. Human waste are known to harbor pathogenic microorganisms that cause disease in workers and consumers of fresh produce. Waste in the field or packing facility must be managed properly to decrease the risk of contaminating produce.

Biosecurity

Biosecurity in farms involves a set of fundamental practices and strategies. These measures prevent the entry and transmission of pathogens in the farms, thus minimizing the negative impact they can have on crops and livestock. Good sanitation is key in ensuring biosecurity of the farm.

Personal Hygiene, Washing Hands, Using Safety PPE

This prevents the spread of germs, hence the prevention of food contamination. Using gloves helps prevent injuries as well as direct contact of hands-on food to prevent contamination.

Employer and Employee Training

Cost incurred in building the capacity of staff in training and skill development.

Clean Water Sources

The farmer or farmer organization has access to, and uses, clean water sources for washing agricultural product (cocoa/coffee/meat), and for ensuring sanitary storage facilities, drying platforms or stations.

Waste Disposal and Designated Dumping Sites

Cost incurred in disposing unwanted products and leftovers on the farm. This cost includes construction of dumping site, labor, rubbish bins etc. All the costs that are incurred in cleaning and disinfection intended to stop the transmission of infectious agents.

Equipment Purchases

This section shows the types of costs your buyer can expect. It correlates with the Food Safety First Costing Tool excel templates and the breakdown of categories are similar. The farmer or farmer organization will estimate a number between 1-3 that corresponds with your current practices in these areas. This includes the costs incurred in purchasing, leasing or renting farm equipment and machinery.

Other

Please enter additional information as needed.

PRICE

Farm Costs to Meet Food Safety Standards During Production/Harvest/Storage

Cost incurred by the farmer or farmer organization to meet food safety standards during the stages of production, harvesting, storage and sale to buyers. To select a value from 0-2, please revisit your details in the Cost Line Items.

Sale of Produce/Products

This is the negotiated price between the producer and the buyer. For example, if Farmer A follows food safety standards and uses food safety management practices (HACCP, ISO9000, GAP, GMP) the producer can negotiate a better, favorable price with the buyer, by pointing out to the buyer that the farmer / farmer organization is compliant with standards. This also refers to receiving a favorable price when meeting buyer standards.

Other

Please enter additional information as needed.

CONTAMINATION

The farmer / farmer organization must be aware of how harmful the use of chemicals can be on food products when the instructions of the chemical are not adhered to. Buyers have expectations of producers. For example, organic coffee/cocoa/spices must not contain any chemicals when tested in a laboratory. To determine Contamination on a scale of 1-3, the farmer / farmer organization should analyze how well the chemical usage is managed on their farm. See earlier descriptions in the Cost Items for more details.

Livestock Contamination

This includes following the correct or recommended dosage of vaccines and medications observed; safe disposal of animal carcass; no vaccine or medication residues in meat, poultry or eggs, use of appropriate chemicals during slaughter for cleaning and sanitation; clean disinfected and appropriate transportation; other.

Proper Use of Approved Agro-chemicals

These are chemicals that are approved for use by farmers⁸ as per the country or buyer standards and requirements. Not using poor quality agro-chemicals that do not meet specifications and have the potential to contaminate crops.

Withholding Period (Pre-Harvest Interval) Observed

The preharvest interval (PHI) is the wait time between a pesticide application and when a crop can be harvested. The label will state how long the crop must remain in the garden or field after spraying. If this period is not observed may cause contamination.

No Residues in Product at Sale

The residue of a chemical or bacteria and its metabolites may accumulate and be deposited or stored within the plant or animal (meat) tissues and organs. Chemical residues have the potential to contaminate food.

Clean, Disinfected and Appropriate Transportation

Please refer to earlier description in Farm Costs Line Items.

Appropriate Cleaning and Sanitation of Storage containers and Facilities

Unapproved chemicals for cleaning and disinfection can cause contamination of crops and food.

Other

Please enter additional information as needed.



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COMPLIANCE CHECKLIST TERMS

Regulatory Requirements: Review the following requirements your buyer may require for the agricultural products you supply. Each farmer or farmer organization assigns themselves a score based on their knowledge of how compliant, moderately compliant, or not compliant they are at meeting the regulatory requirements. The score is between 1-3 points for each term: **1 point** = non-compliant; **2 points** = moderately compliant and **3 points** = compliant.

Compliance Checklist for Meeting Regulatory Requirements Terms

AUDITING

Management Process

This determines how well the farmer or farmer organization is managing its food safety, and compliance protocols. It includes hygiene standards of cleaning, ventilation, disinfection processes that are performed at the farm / farmer organization sites, e.g. storage, processing or packing facility. It is an audit of the management process that is carried out by an external auditor.

Risk Assessment, Hazard Identification, and Control

As part of the auditing process the farmer or farmer organization must assess where risks could occur. By identifying the risks, the farmer or farmer organization can avoid being non-compliant in an audit. Similarly, Hazard Identification assesses the control measures and monitoring schemes the farmer or farmer organization identifies to address. Hazard controls measure the management system.

Human Resources

Critical human resource with knowledge on food safety, cost and budget issues are captured.

Health and Safety

Health, food safety and hygiene-related cost/budget issues on biological issues are identified and complied with.

Microbiology

Food safety and hygiene related cost/budget issues on biological issues are identified.

Hazard Identification

Control measures and monitoring schemes are identified to improve hazardous and harmful issues.

Hazard Control

Control measures and monitoring schemes are provided to improve hazardous and harmful issues.



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CONTROL AND SURVEILLANCE

MONITORING

Corrective Action

Activities designed to control and provide corrective hazardous occurrence.

Review

Constant monitoring and reviewing of safety and budget issues.

Record Keeping

Knowledge and information on costs and budget related are shaped and developed.

ENFORCEMENT OF LAWS/POLICIES

Guidelines

Guidelines on costs and budget related knowledge are shaped and developed.

Enforcement

Ensure standardization and safety measures rules are enforced.

Traceability and Recall

Traceability and recall studies and research are done to understand performance and recall of products not complying with safety issues.

Punishment for Defaults

Measures assigned to punish professionals and food safety actors not complying with standards and safety measures.

Control and Surveillance

Surveillance and control measures are mapped for effective analysis.

ANALYSIS

Planning (Identifying the Most Appropriate Analytical Procedure)

Proper planning and decision-making processes are done to address issues of cost and budget in the food safety business.

Sample Selection

Food safety and hygiene cost and budget issues are selected

Sample Preparation

Food safety and hygiene cost and budget issues are sampled and prepared.

Performance of Analytical Procedure/Testing

Food safety and hygiene issues relative to cost and budgets are analyzed and tested.

Statistical Analysis of Measurements

Food safety and hygiene issues are inferentially measured using statistical tools.

Data Reporting

Data on food safety issues and compliance are well documented and reported.



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STANDARDS AND PROTOCOLS

Safety Standards

Ensure standardization and safety measures are compiled and applied.

Quality Assurance

Ensure standardization and safety measures compliance.

Equipment

Equipment calibrated to ensure standardization and safety.

Sanitation

All the cleaning, ventilation, and disinfection processes are performed to stop the transmission and spread of contaminations.

CHECKS AND CODES

Consumer Protection

Activities are designed to control and prevent hazardous impacts on consumers and ensure that their consumption patterns are safe and dependable.

Transparency

Transparent processes are adopted in dealing with compliance issues on food safety.

Consistency

There is detailed followed through of events that are done continuously and consistently.

Preventative Measures

Activities designed to control and prevent negative and hazardous occurrence.

Cooperation and Coordination Between Multiple Competent Authorities

Scheduling timelines for easy and effective coordination of institutions such as FDA and other compliance bodies.

SCHEDULING

Scheduling

Monitoring and scheduling processes involved in food safety issues.



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INSPECTIONS

Site Inspection

Professionals and regulators ensuring that sites are inspected to ensure that all food safety issues are obeyed, followed for quality assurance and compliance.

Sampling Food During Harvest, Processing, Storage, Transportation, or Sale to Establish Compliance. Aggregating and doing specific sampling processing of each value chain for compliance.

Recognizing, Collecting, and Transmitting Evidence When Breaches Of Law Occur. Recognizing and collecting compliance processes of food safety issues during the period of breach.

Punitive Actions

Measures assigned to punish professionals and food safety actors for not complying to standards.

TRAINING/AWARENESS

Producers

A group of farmers, farmer organizations, cooperatives, and manufacturing and industry professionals, processing raw materials with much focus and control of food safety rules.

Processors

A group of aggregators, traders, intermediaries, processors and manufacturing and industry professionals, processes of raw materials with much focus and control of food safety rules.

Inspectors

Professionals and regulators ensuring that official regulations of food safety issues are obeyed, followed for quality assurance and compliance. Usually an employee of a larger agribusiness, including supermarkets, that processes agricultural products or part of the government staff that inspect agricultural products prior to shipments or sales.

Other Actors within the Food Chain

Any other actors within the food value chain



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FOOD SAFETY RESOURCES



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Food Safety Resources

Corus International Whitepaper: [Achieving Food Safety: A White Paper on the Cross Section of Food Safety and Farmers in Low- and Middle-Income Countries.](#)

Food Safety First Costing Tool: <https://indd.adobe.com/view/52c86e13-4c45-43d8-a3ea-8d85d2403990>

World Trade Organization: https://www.wto.org/english/docs_e/legal_e/15sps_01_e.htm

World Health Organization: <https://www.fao.org/fao-who-codexalimentarius/home/it/>

International Finance Corporation: https://www.ifc.org/wps/wcm/connect/Industry_EXT_Content/IFC_External_Corporate_Site/Agribusiness/Advisory/Global+Food+Safety+Program/

Center for Disease Control (CDC), Microbiological Indicator Testing Fact Sheet: <https://sanitationupdates.files.wordpress.com/2010/11/microbiology2020.pdf>

Farmer Certification

Global Food Safety Initiative <https://mygfsi.com/how-to-implement/certification/>

GLOBALG.A.P. https://www.globalgap.org/uk_en/

Organic <https://www.ams.usda.gov/services/organic-certification>

Fairtrade <https://www.fairtradecertified.org/>

Rainforest Alliance <https://www.rainforest-alliance.org/for-business/2020-certification-program/>

Common Code for the Coffee Community <https://www.4c-services.org/>

Management Systems and Certificates

ISO Standards: <https://www.iso.org/iso-9001-quality-management.html>

Foundation FSSC: <https://www.fssc.com/>; <https://www.fssc.com/schemes/fssc-22000/>; <https://www.fssc.com/schemes/fssc-24000/>

Livestock emergency guidelines and standards: <https://www.livestock-emergency.net/>

SPHERE Standards: <https://spherestandards.org/handbook-2018/>

Regulatory Requirements

Food and Drug Administration (FDA): <https://www.fda.gov/food/guidance-regulation-food-and-dietary-supplements/current-good-manufacturing-practices-cgmps-food-and-dietary-supplements>

United States Department of Agriculture (USDA): <https://www.ams.usda.gov/services/auditing/gap-ghp>

USDA ERS – Phytosanitary Regulation: <https://www.ers.usda.gov/data-products/phytosanitary-regulation/>

International Food Trade: Codex Alimentarius: <https://www.exponent.com/services/practices/environmental-sciences/chemical-regulation-food-safety/capabilities/food-safety-nutrition-regulatory-support/food-overview/codex-alimentarius/?servicelId=f9d1286d-7c67-460d-a081-154df0ffb6af&loadAllByPageSize=true&knowledgePageSize=7&knowledgePageNum=0&newseventPageSize=7&newseventPageNum=0&professionalsPageNum=1>