Food and Agriculture Organization
of the United Nations

GHP – SECTION 2

PRIMARY PRODUCTION

FAO Good Hygiene Practices (GHP) and
Hazard Analysis and Critical Control Point
(HACCP) Toolbox for Food Safety

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Hazard Analysis and Critical Control Point
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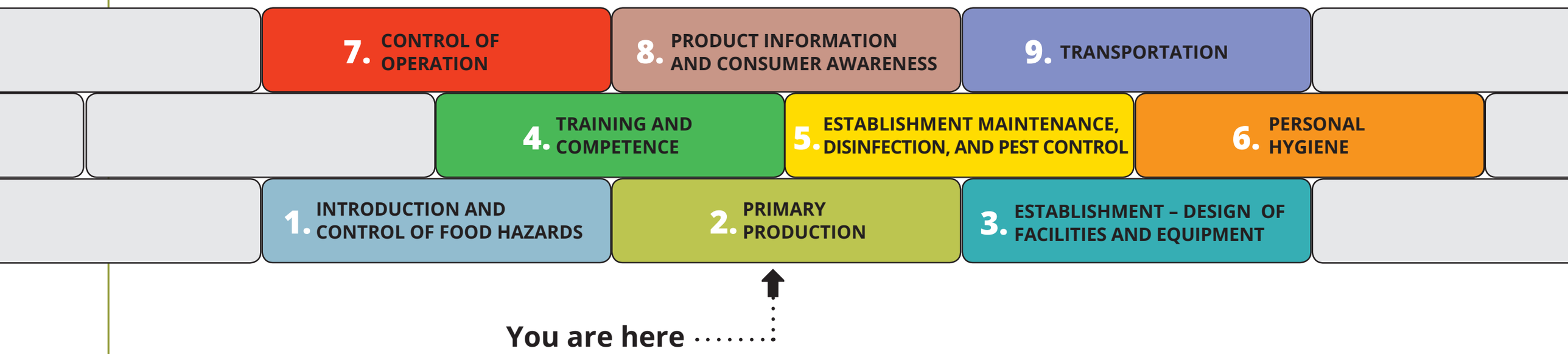
PRIMARY PRODUCTION

SCOPE AND INSTRUCTIONS FOR USE

This guidance document is part of a toolbox of materials and has been developed to provide users with a good understanding of Section 2, Primary production of the Codex General Principle of Food Hygiene (CXC 1-1969).

Effective and well-established Good Hygiene Practices provide the foundation for food safety management systems. This tool divides the practices into nine sections, as illustrated by the brick schematic below. The section addressed by the current guidance document is indicated by the arrow.



PRIMARY PRODUCTION

CONTEXT

The types of activities involved in raising animals, growing crops, farming fish, hunting and fishing can introduce multiple hazards that can enter the food chain at the stage of **primary production**. Food safety along the value chain can only be assured if primary production activities are managed in a way that reduces the likelihood of introducing a contaminant that could affect the safety of the food, or make it unsuitable for consumption.

Rationale

To reduce the likelihood of introducing a contaminant which may adversely affect the safety of food, or its suitability for consumption, at all stages of the food chain.

Learning objectives

This document provides guidance on how to:

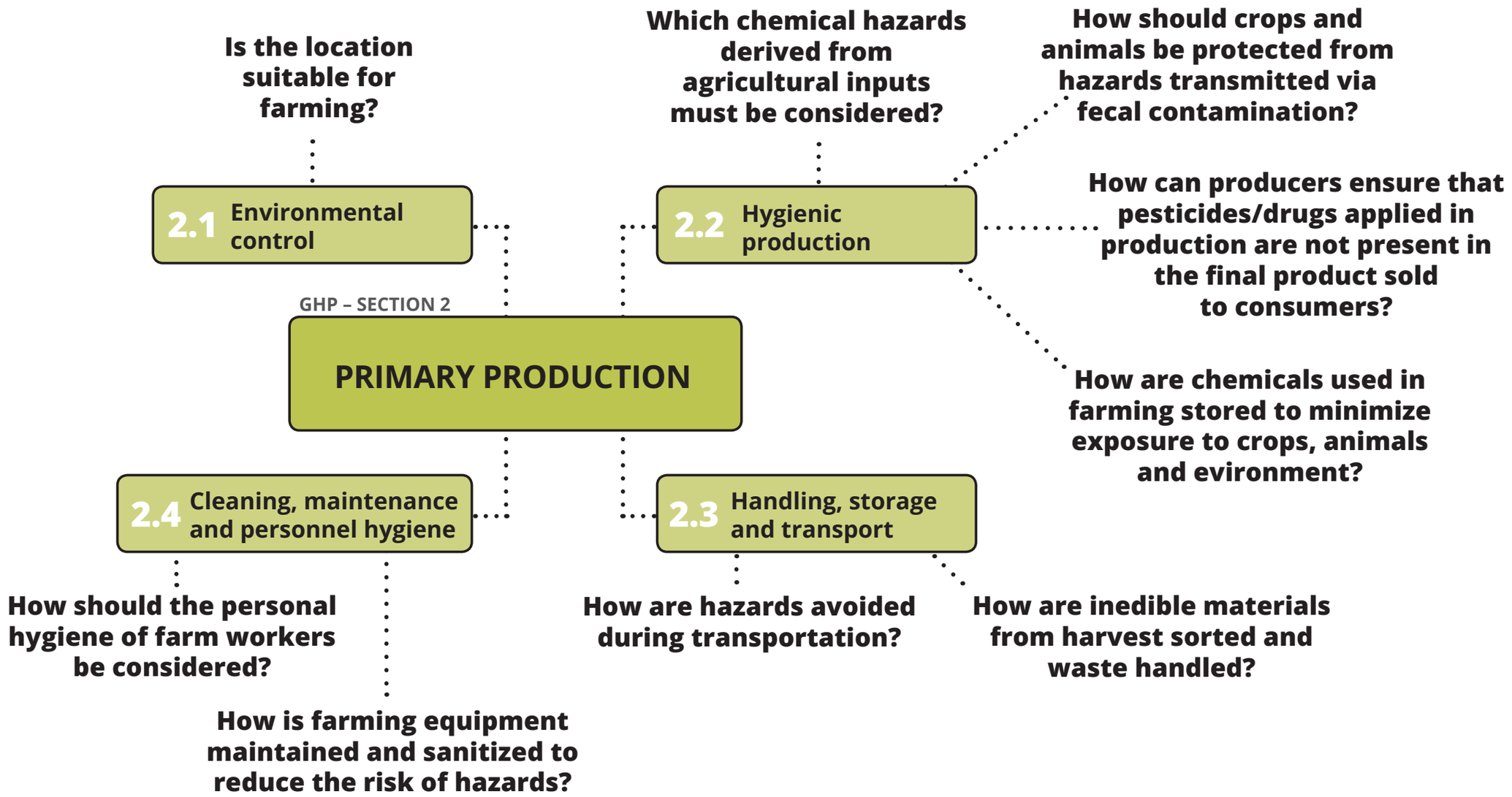
- identify potential food safety hazards in primary production; and
- understand the principles of how hazards can be minimized and controlled by following Good Agricultural Practices (GAP) and Good Hygiene Practices (GHP).

Codex definitions:

Primary production: Those steps in the food chain up to and including storage and, where appropriate, transport of outputs of farming. This would include growing crops, raising fish and animals, and harvesting plants, animals or animal products from a farm or their natural habitat.

MINDMAP

This section of the guidance is divided into sub-sections. You can jump to a particular sub-section by clicking on it, or return to this page at anytime by clicking on PRIMARY PRODUCTION



PRIMARY PRODUCTION

2.1 ENVIRONMENTAL CONTROL

Hazards that pose a threat to crops and/ or animals could be present or be introduced into the environment. Hazards can be found within the production environment (e.g. in the field or the barn), nearby or they can be introduced via agricultural inputs.

LAND

The land on which crops are grown or where animals roam and graze can be a source of hazards. Typically, the hazards relate to the historic use of the land.

Things to consider

- **Pesticides** applied to land can remain in the soil for years. These pesticides can later be found in crops grown in that soil and can be toxic to animals that graze on or roam the land.

- **Manure** can introduce pathogens into the soil that can survive up to 120 days, infecting animals that graze on the land or contaminating crops that are cultivated on it.

- If the site has been used for **landfill**, there is a risk of encountering physical hazards such as glass, chemicals that could be toxic and/or biological hazards such as pathogens.

PRIMARY PRODUCTION

2.1 ENVIRONMENTAL CONTROL

LOCATION

Hazards can be introduced from the surrounding environment and can contaminate crops and negatively affect the health of animals. Such hazards could be nearby, or they could be carried by the wind or water to the farm land from further away.

Things to consider

- **Effluent from wastewater treatment facilities** can harbour pathogens that can be introduced to crops or animals exposed through irrigation and drinking water. This is especially a risk where surface water is used.

- **Compost piles, lagoons and septic tanks** can leak into fields or water sources, introducing pathogens.

- **Land that is prone to flooding** can be contaminated by hazards from septic tanks, wastewater works, manure and compost piles.

- Industrial sites, urban centres and animal production facilities can spread **toxic chemicals or pathogens via the wind**. It is essential that there be an adequate buffer zone between the contamination source and the production area.

PRIMARY PRODUCTION

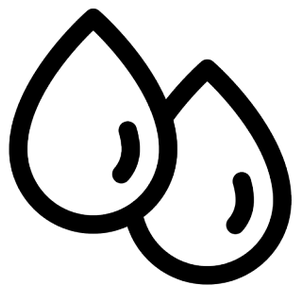
2.1 ENVIRONMENTAL CONTROL

WATER SOURCES

Water is a significant source of biological (e.g. pathogenic microorganisms) and chemical (e.g. above-limit pesticide residues) hazards.

The source of contamination can be far away from where the water is being used for irrigation or being provided for animals. This is why it is necessary to conduct an up-stream assessment.

The risk of water containing hazards will vary depending on the source. Moreover, the concern about the quality of the water with respect to microbiology and chemical criteria will differ depending on how it is being used. For example, water for irrigating crops does not have to be of the same quality as drinking water. The quality of water is referred to as “fit-for-purpose” with the criteria dependent on its ultimate use.



PRIMARY PRODUCTION

2.1 ENVIRONMENTAL CONTROL

Things to consider

- **Surface water** (e.g. rivers, lagoons) is at the highest risk of harbouring hazards and should be used only on low-risk crops that will be cooked (e.g. root vegetables), and should be treated for other crops that will be consumed raw (e.g. tomatoes, leafy greens).

- **Ground, wells and bore holes** are not typically exposed to the same contaminants as surface water, although hazards can enter if these are not well maintained. This is also true for transfer pumps and pipes.

- **Manure heaps, compost piles and effluent discharge** should be a minimum of 40 metres from water sources. Pesticide should not be applied within six metres of the water source.

- **Water treatments** based on chemical (e.g. chlorine, peracetic acid) or physical (e.g. ultraviolet C radiation, filtration) treatments should be considered with high-risk water sources.

- **Testing water sources** before using them could be helpful but contamination can occur at any time and at levels that are difficult to detect. Yet, testing can verify the effectiveness of disinfection treatments.

PRIMARY PRODUCTION

2.1 ENVIRONMENTAL CONTROL

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Land	Documentation of previous land use, and use of pesticides, fertilizers and manure.
Location	Documentation of flooding. A map showing potential upstream sources of water. Mitigation plans if water sources are at high risk of contamination.
Water	Maintenance log and schedule for wells, pump heads and transfer pipes. Documentation of fertilizer and pesticide use. Microbiological and chemical water testing data.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

In the hygienic production of crops or animals, the key is to implement steps or procedures **to prevent, manage or eliminate sources of contamination**. This should include using mitigation methods where required to ensure that any agricultural inputs are free of hazards.

It is necessary to consider that wind and contaminated water can carry waste and harmful substances into crop or animal production from distant locations.

For hazards such as fertilizers, pesticides and other toxic chemicals, the site should be secured with restricted access so that unauthorized persons will not be exposed to harmful substances.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

SOIL

Anything that is added to the soil, such as pesticides, fertilizer or manure, can remain in the soil over extended periods (months to years) and can contaminate crops.

Such hazards can also be transferred to processing facilities if soil is picked up during harvesting.

Things to consider

- **Document the historical use of land** to assess the risk of hazards such as fertilizers, pesticides or manure.
- If there is no record of the historical use of the land, **perform soil sampling** to determine if hazards are present.
- **Minimize the amount of soil that is picked up during harvesting of crops** such as root vegetables and leafy greens.
- Ensure that the soil is **removed** from mechanical harvesters and reusable plastic crates **between uses**.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

WATER

Water is essential in primary processing. It is used for irrigating, washing, sanitizing and for transportation, as well as for workers and animals as drinking water.

Physical, chemical and biological hazards can be present in the water at its source, but such hazards can also be picked up as the water is transferred through pumps to the land, through irrigation systems or in storage containers. Biofilms can form in pipes and pumps and cannot easily be removed and cleaned out.

Rainwater is typically free of micro-organisms and chemicals but can become contaminated when collected from roofs or guttering.

Storage tanks can become contaminated if they are not maintained or have previously been used to store chemicals such as pesticides.

Reused and recycled water can contain hazards if it has not been treated and made fit-for-purpose.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

Things to consider

- Microbiological and chemical hazards present in source water can be transferred and accumulate in pipes, transfer pumps and storage tanks.

- Rainwater can become contaminated when collected from roofs and rain gutters.

- Maintenance, periodic sanitation and care in selecting source water can reduce the risk of contaminating pipework, pumping and storage tanks.

- Reused water (e.g. recycled or spent wash water) should be treated and made fit-for-purpose (e.g. whether the water is used for cleaning vs irrigation).

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Water source and manintenance of pipelines, pumps and storage	Documentation of water testing and maintenance schedule, including contamination history and root cause analysis.
Soil analysis and pesticide use	Documentation of soil analysis and log of pesticide use on land.
Sanitation of harvesting equipment and crates	Documentation that includes standard operating procedures (SOPs) for sanitation and maintenance.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

FEEDSTUFF

Animal feed can contain hazards (biological and chemical) that can be passed onto the consumer through meat. For example, *Salmonella* in animal feed can infect the animal and can contaminate the meat and the environment (e.g. shedding into human food and water sources, or contamination during the slaughter process).

Chemical hazards such as mycotoxins and pesticides can accumulate in muscle and can be found in the meat. Physical hazards (glass, wire) can be found in feed but represent a hazard to the animal rather than the consumer.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

Things to consider

- Slaughterhouse waste must be rendered before use to reduce the risk of spreading pathogens. Food waste should also be rendered given the pathogen risk.

- Feed should be stored appropriately. Specifically, dry feed should be protected from moisture to avoid mould. Feed with a high moisture content, such as fish meal, should be refrigerated or made stable by fermentation or by adding preservatives.

- Feed should be procured from a certified supplier that follows GHP. The supplier can provide a letter of assurance that the feed is free of hazards and can sometimes provide a tour of the production facility if requested. Check batches of feed for defects such as excessive moisture or visible spoilage in the case of dry feed.

- Medicated feed can be used when necessary but it is not a substitute for proper sanitation. Medicated feed should be stored separately from regular feed and used in rotation, being careful not to use any that has passed its expiry date.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Incoming feed	Documentation of certificate of analysis, checks on feed quality and lot codes.
Storage	Feed should be stored safely to prevent the growth of micro-organisms. Document the stock rotation.
Medicated feed	Document the use of medicated feed and ensure that only non-expired lots are used.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

FERTILIZER

Fertilizers are applied to land to increase its fertility and produce larger crop yields. Since fertilizers can be a food safety concern, it is important to develop a system to ensure that crops and water sources are not contaminated.

Things to consider

- Only apply fertilizer when needed and only at the right dose. Analyze the soil to assess the nutrient requirements for the crop being produced, and use the correct dosage.

- Ensure that fertilizer dosing machines are calibrated to deliver the required quantity.

- Do not apply fertilizer within six metres of a water source, on slopes or on frozen ground.

- Ensure that fertilizers are stored in their original packaging and in a secure location that is not prone to flooding or excessive humidity.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Fertilizer dosing	Perform and document soil analyses to determine if fertilizer is needed and at what dose.
Calibrating fertilizer dosing equipment	Documentation of calibration records for dosing equipment.
Fertilizer management plan	Documentation of fertilizer usage and steps taken to prevent contamination of land and water sources.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

PESTICIDES

Pesticides are applied to crops to control plant pathogens, insects and weeds. Ideally, no pesticides should be used during a growing season, but there are inevitable issues with pests. Pesticides represent a food safety hazard due to their potential to contaminate the environment and water supplies. In addition, pesticide residues on crops above safe limits may result in public health and trade issues.

Things to consider

- Use only approved pesticides within the expiry date, and adhere to the withdrawal schedule for specific crops.
- Avoid spraying pesticides in the rain, within six metres of water sources and where animals/people are present. Do not spray pesticides in windy conditions where they could be spread to animal or urban populations.
- Store pesticides in their original packaging and in a secure location that is not prone to flooding or excessive humidity.
- If it is possible that a crop has been contaminated with pesticides, it is necessary to test using detection techniques of sufficient sensitivity (i.e. below the permitted regulatory limit for pesticide residues on crops).

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Approved pesticides and usage	Documentation to verify that the applied pesticide is permitted. A log of pesticide use.
Application of pesticides	SOPs on how and when pesticides should be applied to minimize environmental contamination and residues on crops.
Pesticide analysis	Documentation of a pesticide analysis of soil and crops. In the event of excess levels of pesticides, it is necessary to have a root-cause analysis corrective action plan.
Pesticide management plan	Documentation on how pesticides are stored, tracked, applied and disposed of.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

VETERINARY DRUGS

Occasionally, animals are given drugs to prevent or cure a medical condition. The hazards associated with veterinary drugs are residues above safe limits that are passed on to the consumer, multi-drug resistant pathogens, and needles that have broken and remained in the flesh or that have been left in the animal by the vet.

Things to consider

- Ensure that any drugs being administered have been approved and are within their expiry date. The efficacy of expired drugs cannot be assured and their use can lead to an increase in multi-drug resistant pathogens.

- When using needles to administer drugs, ensure they have been removed from the animal's flesh.

- Store drugs in a secure place and keep a log of their use.

- Do not use veterinary drugs to compensate for poor sanitation or animal management. Use only as prescribed.

PRIMARY PRODUCTION

2.2 HYGIENIC PRODUCTION

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Approved veterinary drugs	Documentation to verify that the drug is appropriate. Maintain a log on the drugs administered to minimize the risk of using expired batches.
Administering drugs	SOPs for logging how the drugs were administered and to account for needles.
Secure storage	Ensure drugs are kept within a secure location.
Consult with a veterinarian	Always consult a veterinarian for prescription of appropriate drugs and after correct diagnosis.

PRIMARY PRODUCTION

2.3 HANDLING, STORAGE AND TRANSPORT

In the course of harvesting, post-harvest transportation and then storage, it is possible to introduce hazards and for biological hazards (bacterial pathogens) to grow.

Controlling hazards during post-harvest operations is a preventative step that will help to ensure that consignments of raw materials moving through the food chain are not contaminated. Preventative controls will minimize the risk of contamination and microbial growth.

REMOVING UNDESIRABLE MATERIALS

Despite the best efforts to reduce the possibility of introducing hazards, it is common for undesirable materials (physical hazards, foods unfit for human consumption and toxic plants) to be transferred to the processing stage from the harvested crops and animals.

Undesirable materials could be anything other than the raw material. Examples include physical hazards such as stones, wire, metal, plastic, weeds, insects, etc.

Apart from obviously spoiled products, raw materials that have been contaminated with human pathogens do not look different from non-contaminated raw materials.

PRIMARY PRODUCTION

2.3 HANDLING, STORAGE AND TRANSPORT

Things to consider

- Perform **quality control assessments** of incoming materials and watch for physical hazards and indicators of spoilage (odour, visible condition).

- Develop **acceptance criteria** that can be used by workers when assessing the suitability of a batch of ingredients. Train workers to identify hazards, such as toxic plants or insects.

- Provide **good lighting** for sorting tables so allow workers to identify hazards. Run conveyor belts at a sufficiently slow rate to enable the batch to be inspected. Introduce flotation tanks, grading sorters and metal detectors.

- Incoming animals should be **inspected for disease or other health issues**. This is best performed by government inspectors or veterinarians, but if they are not available, trained workers can perform inspections.

PRIMARY PRODUCTION

2.3 HANDLING, STORAGE AND TRANSPORT

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Quality and safety assessment for incoming raw materials	Create acceptance criteria for raw materials and a traceability system to identify the lots under consideration.
Sorting tables and associated technologies	Provide tools/technologies for workers to aid incoming raw material assessment, such as sorting tables, flotation tanks and metal detectors.
Training	Provide workers with training to identify visible hazards. Document when hazards are identified and perform a route-cause analysis with the aid of the supplier.
Diversion/reworking of batches that harbor hazards	Establish a SOPs for handling batches containing hazards. Document lot numbers and the use of each batch.

PRIMARY PRODUCTION

2.3 HANDLING, STORAGE AND TRANSPORT

STORAGE

Storage temperature is a critical to ensuring control of pathogen growth and preventing spoilage. Rotating stock and making an inventory of products and ingredients enhances production efficiency and reduces waste. The temperature of storage facilities should be regulated and monitored carefully to prevent mechanical failure and to reduce the risk of condensation, which facilitates the growth of pathogens and other micro-organisms.

Things to consider

- Foods can be stored frozen (-18 ∞C), super-chilled (-3 to 0 ∞C), refrigerated (1 to 4 ∞C) or at room temperature. The type of storage selected will depend on the perishability of the product, time required for the food to be preserved and temperature sensitive.

- Use an inventory of products and raw ingredients within storage and ensure stock rotation systems are in place.

- Ensure a preventative maintenance plan is in place for temperature storage and ensure good air circulation to avoid condensation, infestations of pests or contact with allergens.

- Create a plan to cope with power outages or other events (e.g. maintaining electric generators, building extra storage, making arrangements to use facilities owned by nearby businesses).

PRIMARY PRODUCTION

2.3 HANDLING, STORAGE AND TRANSPORT

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Storage of different foods	Document the temperatures required to store different raw materials and finished products.
Organize storage to prevent allergen hazards and pest-infestation	Store allergens away from other foods and preferably at ground level. Do not overstock foods. Keep foods on higher shelves, away from the ground, to minimize pest-infestations.
Storage temperature and humidity	Document temperature and relative humidity levels within storage areas. Ideally, keep continuous measurements even if they are performed manually. Ensure good air circulation and minimize condensation and humidity.
Maintenance	Document preventative maintenance schedule and record equipment failures. Inspect condensation units and condensate collection trays. Visually inspect for mould and any package openings caused by pest infestation.
Emergency response plan	Develop SOPs for actions to be taken in the event that temperature controls fail.
Stock inventory	Establish an inventory system and ensure stock rotation.

PRIMARY PRODUCTION

2.3 HANDLING, STORAGE AND TRANSPORT

TRANSPORTATION

The method of transportation used to convey foods can also be a source of contamination if a previous consignment contained something hazardous, such as waste, raw meat or industrial chemicals. If a breakdown of the cooling or freezing units occurs while transporting refrigerated or frozen foods, or if these foods are exposed to the ambient temperature for too long when loading and unloading, micro-organisms can grow.

Things to consider

- Establish a transport log to document previous consignments, sanitation and maintenance of the transportation used. Request documentation about previous consignments from third-party carriers.

- Implement a sanitation plan to ensure that the interior of transportation units have been cleaned and disinfected between loads.

- Monitor the temperature of produce as it is being loaded into the transportation unit and again as it is being unloaded.

- Avoid transporting allergens and industrial chemicals along with food.

PRIMARY PRODUCTION

2.3 HANDLING, STORAGE AND TRANSPORT

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Transport log	Establish a log to record the previous cargo that has been shipped in the transportation container you will use.
Maintenance	Document maintenance of transportation systems including temperature control units.
Sanitation	Develop a sanitation plan to ensure the transportation units are cleaned and disinfected between loads. Verify that any residual sanitizer has been cleaned away, especially when transporting liquids.
Temperature monitoring	For heat sensitive goods, document the temperature history during transportation and monitor the temperature of the goods as they are being loaded and unloaded.

PRIMARY PRODUCTION

2.3 HANDLING, STORAGE AND TRANSPORT

WASTE HANDLING

During animal or crop production, waste is inevitable. In animal production the types of waste could include manure, spoiled feed, drugs, bedding and dead animals. Such waste can contaminate food products or agricultural inputs, such as water.

Things to consider

- Separate waste from raw materials and the finished product to minimize cross-contamination.
- If waste is stored onsite, ensure it is far from the production areas.
- Clearly identify any waste to avoid confusion with non-contaminated ingredients or the end product. Spray the waste with paint, for example, add labels or create a secured area.
- Establish a traceability system to follow the process of disposing of the waste or of reusing it.

PRIMARY PRODUCTION

2.3 HANDLING, STORAGE AND TRANSPORT

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Establish hazard level of waste	Undertake a risk assessment of the waste. Waste from animal origins, for example, is more hazardous than waste from plants. Separate high-risk waste (animal) from low-risk waste (plant) and avoid mixing them.
Storage area	Hazardous waste should be stored in a location that is far from the production areas.
Waste identifier	Develop a system to identify waste material. This could involve spray painting, labels or signs.
Traceability	Develop a traceability system to track the waste as it is disposed of or reused. This is to minimize the risk of waste being reintroduced into the food chain.
Documentation	Document the types of waste, procedures for handling them and disposal.

PRIMARY PRODUCTION

2.4 CLEANING, MAINTENANCE AND PERSONNEL HYGIENE

Hazards can be introduced into crops during harvesting by workers or through cross-contamination of contact surfaces (harvesting equipment, knives, tables). Avoiding such contamination requires a set of practices as well as tools and facilities to apply them.

PERSONAL HYGIENE OF FARM WORKERS

Farm workers can carry pathogens. Pathogens from fecal matter are the main concern. The best way to prevent fecal matter from touching the crop, directly or indirectly, is to provide clean washroom facilities where workers can wash and dry their hands and for workers to wear gloves.

Portable-washroom facilities should be provided close to the workers' area. This will encourage the workers to use the facilities rather than the field.

There must be a **functional handwashing facility** close to the portable-washroom and the workers should be given the option to wear gloves. However, gloves should not be used as an alternative to handwashing.

Monitor the health status of workers before they start a shift. If any workers show symptoms of illness (fever, vomiting, diarrhoea), consider sending the worker home until recovered or put the worker on duties that do not involve contact with the crop.

PRIMARY PRODUCTION

2.4 CLEANING, MAINTENANCE AND PERSONNEL HYGIENE

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Portable washroom facilities	Provide portable washroom facilities near the working areas. The facilities should also be cleaned on a schedule to encourage use.
Handwashing facilities	Provide hand washing facilities with water, soap and, ideally, a nailbrush. If running water is unavailable, provide a container, such as a bucket, of water and ensure that it is changed frequently.
Gloves	Gloves prevent direct hand contact with the product. However, gloves should not be a substitute for handwashing, and they should be changed frequently.
Health Status	Document the health status of workers prior to each shift. This can include self-reporting, a questionnaire and/or temperature checks. If possible, services of a health consultant such as a medical doctor or a nurse could be offered.

PRIMARY PRODUCTION

2.4 CLEANING, MAINTENANCE AND PERSONNEL HYGIENE

AT FARM LEVEL

Equipment such as harvesters, knives, conveyers and tables have contact with the food and can be sources of contamination. If equipment is not adequately sanitized or maintained, biofilms can develop. These are difficult to remove and can cause continuous contamination.

Things to consider

- Ensure equipment is maintained and damage is repaired. Micro-organisms can live in damaged areas where they will establish biofilms. Also, damaged equipment can introduce physical hazards (bolts, plastic) into the product.

- Establish a sanitation plan and schedule for equipment that ensures that any contamination can be removed without causing damaging the equipment. For example, avoid using excessive sanitizer or force (e.g. high pressure sprays, hard brushes) as both could lead to damage where biofilm could develop.

- Provide training to workers so they can perform the sanitation and verify its effectiveness.

PRIMARY PRODUCTION

2.4 CLEANING, MAINTENANCE AND PERSONNEL HYGIENE

FBO RESPONSIBILITIES

Topic	Examples of what you should do
Maintenance and repair	Establish a maintenance schedule to avoid progressive damage. Train workers to repair damage as it occurs.
Sanitation plan	Develop a sanitation plan that includes standard sanitation operating procedures. This would include instructions on how to disassemble machines, sanitation procedures and monitoring methods.
Staff training	Ensure staff are trained in sanitation and are provided the tools (brushes, low pressure hoses) to carry out the task correctly.
Documentation	Prepare a documentation system to record maintenance and repairs, sanitation plans and monitoring.

PRIMARY PRODUCTION

IN SUMMARY

	Source of hazard	Why it matters
Location	• proximity to industrial areas • proximity to disposal sites • locations prone to flooding	• Toxic fumes, a chemical hazard, can contaminate raw materials and/or facilities. These chemical hazards cannot be eliminated during processing. • Flooding leads to mould growth that will contaminate raw materials.
Structure	• includes hiding/breeding sites for pests • lack of protection from elements • lack of boundaries to keep animals out	• Pests will leave droppings and urinate, resulting in unhygienic premises. • Pests will damage raw materials and foods, introducing biological hazards. • Birds, rodents, cats will enter into food processing premises and introduce biological hazards. • Storage spaces must be rain-safe, otherwise there is a risk of moulds.

PRIMARY PRODUCTION

IN SUMMARY

	Source of hazard	Why it matters
Facilities	• lack of drainage • lack of light • high humidity • difficult to clean	• If you cannot see and/or cannot reach spaces, cleaning and inspections become difficult thus increasing the risk that pest infestations go unnoticed. • Raw materials must be stored in a way to ensure that humidity/temperature is controlled and that air can circulate. • First-in/first-out can only be guaranteed if the staff can see and access the stored food. • Cleaning can only be carried out correctly if all areas can be accessed and there is sufficient visibility.
Equipment	• difficult to clean • difficult to maintain • lack of monitoring options for temperature controls	• Pathogenic bacteria are known to hide behind o-rings, for example, or to thrive in minuscule cracks. Any equipment used for processing or storing foods must be well maintained and cleanable. • Food processing/presenting equipment must maintain foods within a defined temperature range and therefore monitoring must be possible.

PRIMARY PRODUCTION

FIND OUT MORE

For additional information on the following topics related to this section, please consult the **Further reading** section accessible from the **SECTION LANDING PAGE**.

How can you interpret the soil and water analysis results? What corrective actions can be taken?

How can you establish a system to prevent undesirable material from entering the food processing area?

How is a risk assessment performed on waste from plant or animal origins?

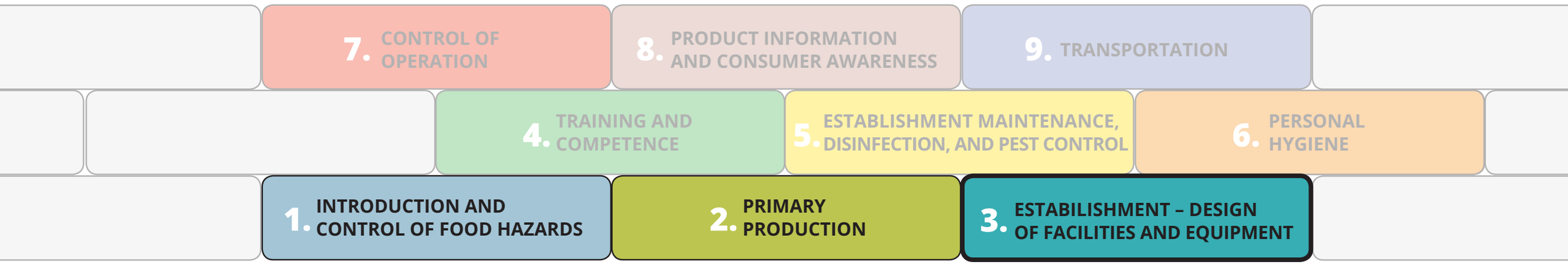
How can you establish a maintenance and sanitation programme on your farm?

How can you design and construct safe areas to store agricultural inputs such as fertilizer, pesticides, feedstuffs and veterinary drugs?

What considerations should you make when developing and operating food storage areas?

KEEP READING

The next section of our GHP toolbox will be Estabilishment – Design of Facilities and Equipment. To continue reading, access the link indicated below.



Click here for the next section

FEEDBACK ON THIS GUIDANCE MATERIAL IS ALWAYS WELCOMED!

Please contact us at: food-quality@fao.org

KEEP READING

GHP and HACCP Toolbox for Food Safety
www.fao.org/good-hygiene-practices-haccp-toolbox

FOOD SYSTEMS AND FOOD SAFETY –
ECONOMIC AND SOCIAL DEVELOPMENT
www.fao.org/food-safety

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