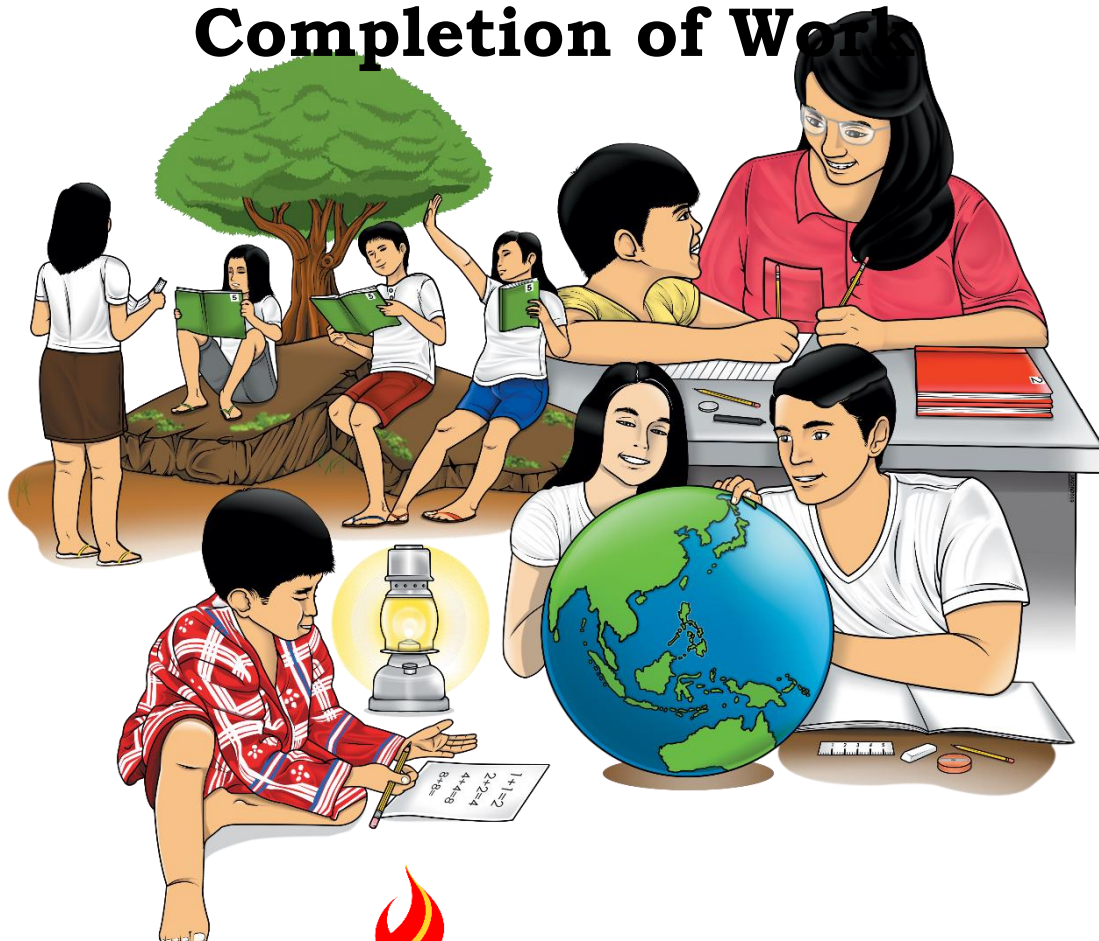


# Technology and Livelihood Education Agri Crop Production Quarter 2 – Module 2: Cleaning up on Completion of Work



**TLE – Grade 9**  
**Alternative Delivery Mode**  
**Quarter 2 – Module 2, Lessons 1 & 2: Cleaning up on Completion of Work**  
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**Technology and  
Livelihood Education  
Agri Crop Production  
Quarter 2 – Module 2:  
Cleaning up on  
Completion of Work**

# **Introductory Message**

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

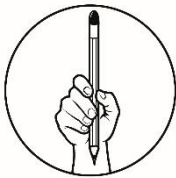


## ***What I Need to Know***

This module was designed and written with you in mind. It is here to help you master on how to store or dispose materials of according to company standard procedures. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

After going through this module, you are expected to demonstrate understanding on the following:

- Return materials to store or dispose of according to company standard procedures



## ***What I Know***

1. What are the procedures for storage of excess materials?

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2. What are the procedures for disposal of waste materials?

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## Lesson

# 1

# Returning Materials for Storage or Disposal

Farmers can store their crops by using barns, cellars, farm sheds or other simple field structures that are usually made of locally available materials. Simple field warehouses are mainly used for storing hay, grains, root, and tuber crops.

Moisture may also germinate the stored seeds, which has to be avoided. Ineffective drying reduces the grain quality and causes huge losses. To protect the grains, they have to be stored in closed containers. For small or medium scale, farmers store them in metal containers or jute bags.

Agricultural waste management is a rapidly changing technology. It is subject to government regulation and sensitive to population growth patterns, community attitudes and land use changes. It is influenced by variables such as soil type, topography, climate, crop and livestock production practices. The trend towards larger and more concentrated livestock operations has accentuated the problems of waste management. This has necessitated better management methods, not only to hold down labor requirements and cost, but also to minimize detrimental effects on the environment.



## ***What's In***

**Multiple Choice.** Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. Which of the following is **NOT** a good practice about storage facilities?
  - A. Allow maintenance and cleaning activities to occur as needed.
  - B. Keep storage facilities well-ventilated and humid.
  - C. Deter pest access and infestation.
  - D. Identify storage facilities properly.
2. Bagged or packaged dry products are stored approximately 10-15 cm on the floor and away from walls. What can be prevented by doing this?
  - A. contamination
  - B. pollution
  - C. decomposition
  - D. spoilage
3. Most crops are suitably stored at a temperature of 4°C to prevent spoilage. Which of the following ranges of storage temperature is required for other products?
  - A. -1°C to 25°C
  - B. -10°C to 21°C
  - C. -1°C to 21°C
  - D. -10°C to 25°C

4. What principle assures that products are rotated through the facility regularly so that the oldest products are used first?

- A. first-in, first-out principle
- B. first-out, first-in principle
- C. rotation principle
- D. storage principle

5. Which of the following is NOT a way to store manure/ compost, fruit and vegetable culls?

- A. Observe proper waste disposal.
- B. Locate storage and treatment sites (for example, composting) as far away as practical from livestock, poultry, fresh fruit and vegetable handling areas and water sources.
- C. Separate them from production and water locations with an appropriate physical barrier designed to minimize contamination due to run-off or leachate.
- D. Let it decompose inside garbage bags or any container exposed to sunlight.



## ***What's New***

### **Principle of Storage**

Principle of storage is classified into:

- Physical storage
- Chemical storage
- Biological storage

Prior to storing any products, make sure storage facilities are in good condition and clean. For all storage facilities for dry products:

- Allow maintenance and cleaning activities to occur as needed.
- Keep storage facilities well ventilated and dry.
- Deter pest access and infestation.
- Identify storage facilities properly.
- Cover and/or protect products during storage, and especially during cleaning, to prevent or minimize contamination by micro-organisms, chemicals, foreign materials and pests.
- Avoid placing packaging material in direct contact with the floor.
- Store bagged or packaged dry products (approximately 10-15 cm) off the floor and away from surrounding walls. This helps to prevent or minimize contamination, pest infestation, water damage, and allows for better air circulation to maintain an even temperature.

## **Temperature & Humidity Control**

Make sure the temperature and humidity of the storage/processing areas, coolers and freezers are appropriate for the product being stored to prevent or minimize food spoilage.

- **Crops:** For most produce, a temperature of 4°C is suitable for storage. However, a number of products require a specific storage temperature, ranging from -1°C to 21°C.

## **Temperature Control Systems must take into account the following:**

- Intended shelf-life of the product
- Type of packaging being used for the product
- Appropriate maintenance schedule for ideal temperature control
- Monitor temperature regularly where required

## **First-In, First-Out Rotation**

- Use the first-in, first-out principle to make sure products are rotated through your facility on a regular basis so that the oldest products are used first.
- Use receiving documents to identify which products are to be used first, or store products in the order received.

## **High Moisture Storage for Crops**

Proper storage of grains is important, otherwise, it will lead to spoilage. Besides, there are a variety of agricultural pests that can cause spoilage - weevils, borers, fungal pathogens. Appropriate conditions maintained during storage can prevent the losses due to these.

- Some crops require a high moisture environment for storage. Ensure that moisture controls are set at the appropriate level and do not provide an environment that will cause unwarranted spoilage to occur.
- To prevent the accumulation of bacteria, clean and sanitize these areas after use.

## **Storage of Manure/Compost, Fruit & Vegetable Culls**

Locate storage and treatment sites (for example, composting) as far away as practical from livestock, poultry, fresh fruit and vegetable handling areas and water sources. Separate them from production and water locations with an appropriate physical barrier designed to minimize contamination due to run-off or leachate.

## **Technique in Storing Chemicals**

Chemicals are used in farms for a variety of purposes. The safe management of chemicals requires access to information and responsible action. Manufacturers, suppliers and users of farm chemicals all have an important role to play. Chemical substances pose different types of risks to people's health, safety and the environment. For this reason, there are different laws controlling them. The purpose



of these laws is to ensure that chemicals are used safely and efficiently so that risks to human health, the environment and damage to property are minimized.

### **Safe Management of Chemicals involves:**

- correct labeling and packaging.
- provision of material safety data sheets (MSDS); and
- safe transport, storage, use and disposal of substances

### **Labeling and Packaging of Chemicals**

Chemicals must be supplied in packages that are correctly labeled and suitable for the substance. Information provided on the label will depend on the type of substance and the risks associated with it. Items to look for are:

1. Signal words such as “CAUTION: POISONOUS” or “DANGER: POISONOUS” used for scheduled poisons – a signal word alerts users to the possibility of poisoning if the substance is swallowed, inhaled or absorbed through the skin
2. The Dangerous Goods diamond if there is an immediate risk to health or safety e.g. flammable liquids
3. Risk phrases describing the type of health effects e.g. irritating the skin, and safety phrases stating precautions for safe handling, storage, spills, disposal and fire e.g. keep away from combustible material

### **Ensure that containers remain labeled**

Farmers must ensure that the original labels remain on containers of substances. If a substance is poured into a second container such as a spray tank then that container must be labeled with the product name, corresponding risk and safety phrases. These can generally be copied from the parent container. Labeling is not necessary if a substance is used immediately and its container is thoroughly cleaned.

There are good reasons for ensuring that proper containers and appropriate labels are used, including:

- Using food containers to store poisons can result in poisoning due to accidental swallowing.
- Insurance companies may question liability if something goes wrong and an unlabeled container has been the cause of an incident.
- Produce cannot be exported if maximum residue limits exceeded labels. Provide advice on permitted use and withholding periods for agricultural and veterinary chemicals.

### **Material Safety Data Sheets**

Material safety data sheets (MSDS) must be produced by the manufacturer or importer of hazardous substance. The MSDS is not just a piece of paper. It provides important and useful advice about what is in the product, its health effects, safe use and handling, storage, disposal, first aid and emergency operation. Farmers must

obtain the MSDS from their supplier and keep them in a register where they are available to people who could be exposed to the hazardous substance. The register is a collection of the MSDS and other information which can be kept in a folder, filing cabinet or other practical system. The register can be kept in the house, workplace or the chemical store, so long as it remains accessible to emergency service personnel and any employees who may be exposed to hazardous substances.

## **Storage and Transport of Chemicals**

Safe storage of farm chemicals is needed to protect them from the elements, restrict access to them, prevent contamination of the environment, food or livestock and ensure separation from other incompatible chemicals. Arrangements must be in place to contain any spillage of the chemical. After considering the potential risk to people's health or to the environment, a farmer might decide that a locked shed with a roof and concrete floor, which is bounded to contain any spills, is the best way to provide safe storage. Remember, you should never store oxidizing agents with fuels. That is – never store substances labeled yellow diamond with a red diamond. Safe transport of farm chemicals depends on what the substance is, how much there is, where it is to be transported and what else is to be transported with it. In general, small quantities (less than 250 liters) can be transported on vehicle provided that the container is properly secured and safe from spillage.

## **Disposal of Farm Chemicals**

Empty farm chemical containers and unwanted chemicals need to be disposed of properly. Prior to disposal of empty containers, wash the container out three times and use the rinse water to dilute further batches of the chemical to working strength.

To wash a container, you do not need to fill it each time. If you only have six liters of water, it is more efficient to use three washes of two liters each, than it is to rinse once with the full six liters.

## **AGRICULTURAL WASTE**

Agricultural waste is composed of organic waste (animal excreta in the form of slurries and farmyard manures, spent mushroom compost, soiled water and silage effluent).

It includes:

- Natural waste
- Animal waste
- Plant waste

## **Waste Management**

- If wastes are not properly handled they can pollute surface and groundwater and contribute to air pollution.
- Proper management of waste from agricultural operations can contribute in a significant way to farm operations.
- Waste management helps to maintain healthy environment for farm animals and can reduce the need for commercial fertilizers while providing other nutrients needed for crop production.
- The process--- reduce, recycle and make it usable for different purpose is waste management.

## Management Processes

- Source
- Generation
- Collection
- Transportation
- Treatment process
- Disposal

### Generation:

- The major quantity of solid waste generated from agricultural sources are sugarcane bagasse, paddy and wheat straw and husk, waste of vegetables, food product, tea, oil production, wooden mill waste, coconut husk, cotton stalk, etc.

### Collection:

- Waste like fruits and vegetable waste collected from houses (*domestic waste*)
- Waste collected from road streets or side
- Collected waste like dry refuse and green waste, animal dung from agricultural field

#### Stubble and straw waste



#### Green waste



#### Roadside waste



#### Animal waste



### Transportation process:

- Wastes collected from the side of roads and agricultural field are transported to decomposed site and for further treatment by trucks, trailers, carts.
- Different types of waste are collected and then transported for further treatment and the waste which is not used is directly disposed to the sanitary land.
- Wastes are not burned in open air, so they are then transported for incineration.

### Treatment Process:

Various treatment processes performed on agricultural wastes are as follows:

- When dealing with agricultural waste, we must follow health and safety regulations.
- We should provide written instruction for storing and disposing of each type of waste we produce.
- We must dispose of waste if we have determined that we cannot use prevention, preparation for reuse, recycling or any other recovery method.

**A. Composting-** is a method in which organic matter present in agricultural waste is decomposed aerobically/anaerobically through a biochemical process and converted into humus.

Three step operation in composting:

### 1. Preparation of agricultural waste

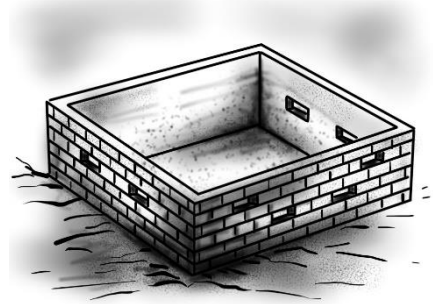
- \* shall be free of material that is not produced in agricultural field
- \* shall be reasonably free of dirt, soil and visible surface
- \* shall be arranged so that it will burn with a minimum of smoke

### 2. Decomposition

Waste is decomposed by three ways:

#### \*NADEP system

**NADEP** method of composting recycles agricultural crop residues to enhance soil fertility. In this aerobic method of composting, farmyard manure is mixed with agricultural crop residues and weeds, thereby enhancing the quantity of organic matter for soil application several times.

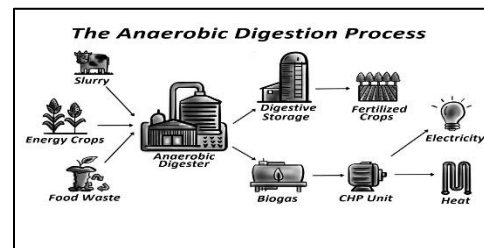


#### \* Vermiculture decomposition

Vermicompost (**vermiculture**) is the product of the decomposition process using various species of worms, usually red wigglers, white worms, and other earthworms, to create a mixture of decomposing vegetable or food waste and bedding materials.

#### \* Anaerobically decomposition

In an **anaerobic decomposing** process, the materials are encased in the **anaerobic** digesters and sealed from oxygen. The organisms begin breaking down the materials into sugars to make them accessible to other bacteria.



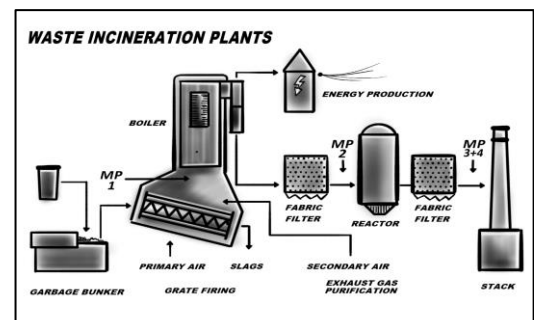
## 3. Product preparation and marketing

### B. Recycling

- \* Process to change waste into new product
- \* Prevent waste of potentially useful materials, reduce the consumption of fresh raw materials, reduce energy usage
- \*Reduce air pollution from incineration and water pollution from land filling.
- \*Lower greenhouse gas emissions
- \*Key component of modern waste reduction and is the third component of the Reduce, Reuse, Recycle

### C. Incineration

Incineration is a waste treatment process that involves the combustion of organic substances contained in waste materials. Incineration and other high-temperature waste treatment systems are described as "thermal treatment." Incineration of waste materials converts the waste into ash, flue gas and heat.



## ENVIRONMENTAL LAWS

Presidential Decree (PD) 1152, –the Philippine Environmental Code, which took effect in 1977, provides a basis for an integrated waste management regulation starting from waste source to methods of disposal. PD 1152 has further mandated specific guidelines to manage municipal wastes (solid and liquid), sanitary landfill and incineration, and disposal sites in the Philippines. In 1990, the Philippine Congress enacted the Toxic Substances, Hazardous and Nuclear Wastes Control Act, commonly known as Republic Act (RA) 6969, a law designed to respond to increasing problems associated with toxic chemicals and hazardous and nuclear wastes. RA 6969 mandates control and management of import, manufacture, process, distribution, use, transport, treatment, and disposal of toxic substances and hazardous and nuclear wastes in the country. The Act seeks to protect public health and the environment from unreasonable risks posed by these substances in the Philippines. Apart from the basic policy rules and regulations of RA 6969, hazardous waste management must also comply with the requirements of other specific environmental laws, such as PD 984 (Pollution Control Law), PD 1586 (Environmental Impact Assessment System Law), RA 8749 (Clean Air Act) and RA 9003 (Ecological Solid Waste Management Act) and their implementing rules and regulations.



### ***What is It***

1. Give the processes prior to storing any products, to make sure storage facilities for dry products facilities are in good condition and clean.

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2. What is the First-In, First-Out rotation principle? Explain.

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3. Why is it important to store grains properly?

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4. What do you think will happen if there are no proper containers and no appropriate labels for chemical storage?

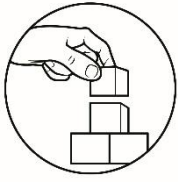
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5. How is composting being done?

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## ***What's More***

### **Activity**

Perform the treatment process and record the progress. Picture or video your actual performance. If picture, make an album/scrap book.

1. Composting
2. Recycling
3. Incineration



## ***What I Have Learned***

Prior to storing any products, make sure storage facilities for dry products are in good condition and clean.

- Allow maintenance and cleaning activities to occur as needed.
- Keep storage facilities well ventilated and dry.
- Deter pest access and infestation.
- Identify storage facilities properly.
- Cover and/or protect products during storage, and especially during cleaning, to prevent or minimize contamination by micro-organisms, chemicals, foreign materials and pests.
- Avoid placing packaging material in direct contact with the floor.
- Store bagged or packaged dry products (approximately 10-15 cm) off the floor and away from surrounding walls. This helps to prevent or minimize contamination, pest infestation, water damage, and allows for better air circulation to maintain an even temperature.

### **First-In, First-Out Rotation**

- Use the first-in, first-out principle to make sure products are rotated through your facility on a regular basis so that the oldest products are used first.

### **Storage of Manure/Compost, Fruit & Vegetable Culls**

Locate storage and treatment sites (for example, composting) as far away as practical from livestock, poultry, fresh fruit and vegetable handling areas and water sources. Separate them from production and water locations with an appropriate physical barrier designed to minimize contamination due to run-off or leachate.

**Safe Management of chemicals involves:**

- ☐ correct labeling and packaging
- ☐ provision of material safety data sheets (MSDS)
- ☐ safe transport, storage, use and disposal of substances

**Waste Management**

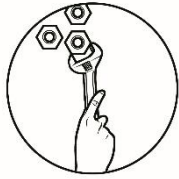
- If wastes are not properly handled, they can pollute surface and groundwater and contribute to air pollution.
- Proper management of waste from agricultural operations can contribute in a significant way to farm operations.
- Waste management helps to maintain healthy environment for farm animals and can reduce the need for commercial fertilizers while providing other nutrients needed for crop production.
- The process--- reduce, recycle and make it usable for different purpose is waste management.

**Management Processes**

- Source
- Generation
- Collection
- Transportation
- Treatment process
- Disposal

**ENVIRONMENTAL LAWS**

Presidential Decree (PD) 1152, —the Philippine Environmental Code, which took effect in 1977, provides a basis for an integrated waste management regulation starting from waste source to methods of disposal. PD 1152 has further mandated specific guidelines to manage municipal wastes (solid and liquid), sanitary landfill and incineration, and disposal sites in the Philippines. In 1990, the Philippine Congress enacted the Toxic Substances, Hazardous and Nuclear Wastes Control Act, commonly known as Republic Act (RA) 6969, a law designed to respond to increasing problems associated with toxic chemicals and hazardous and nuclear wastes. RA 6969 mandates control and management of import, manufacture, process, distribution, use, transport, treatment, and disposal of toxic substances and hazardous and nuclear wastes in the country. The Act seeks to protect public health and the environment from unreasonable risks posed by these substances in the Philippines. Apart from the basic policy rules and regulations of RA 6969, hazardous waste management must also comply with the requirements of other specific environmental laws, such as PD 984 (Pollution Control Law), PD 1586 (Environmental Impact Assessment System Law), RA 8749 (Clean Air Act) and RA 9003 (Ecological Solid Waste Management Act) and their implementing rules and regulations.



## ***What I Can Do***

Perform either NADEP system or vermiculture of decomposing and record the progress.



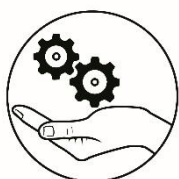
## ***Assessment***

**Multiple Choice.** Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. Which of the following is **NOT** a good practice about storage facilities?
  - A. Allow maintenance and cleaning activities to occur as needed.
  - B. Keep storage facilities well ventilated and humid.
  - C. Deter pest access and infestation.
  - D. Identify storage facilities properly.
  
2. Bagged or packaged dry products are stored approximately 10-15 cm on the floor and away from walls. What can be prevented or minimized by doing this?
  - A. contamination
  - B. pollution
  - C. decomposition
  - D. spoilage
  
3. Most crops are suitably stored at a temperature of 4°C to prevent spoilage. Which of the following ranges of storage temperature is required for other products?
  - A. -1°C to 25°C
  - B. -10°C to 21°C
  - C. -1°C to 21°C
  - D. -10°C to 25°C



4. What principle assures the products are rotated through the facility regularly so that the oldest products are used first?
- A. first-in, first-out principle
  - B. first-out, first-in principle
  - C. rotation principle
  - D. storage principle
5. Which of the following is NOT a way to store manure/ compost, fruit and vegetable culls?
- A. Observe proper waste disposal.
  - B. Locate storage and treatment sites (for example, composting) as far away as practical from livestock, poultry, fresh fruit and vegetable handling areas and water sources.
  - C. Separate them from production and water locations with an appropriate physical barrier designed to minimize contamination due to run-off or leachate.
  - D. Let it decompose inside garbage bags or any container located direct to sunlight.



## ***Additional Activities***

Interview some farmers about how they store and dispose waste material in a designated area according to company procedures. Write notes here.



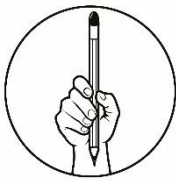
## ***What I Need to Know***

This module was designed and written with you in mind. It is here to help you master on how to clean, maintain and store tools and equipment according to

manufacturers' specifications. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

After going through this module, you are expected to demonstrate understanding on the following:

- Clean, maintain and store tools and equipment according to manufacturers' specifications
- Report work outcomes to the authority following established reporting formats



## ***What I Know***

1. What are the general cleaning procedures?

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2. What are the cleaning procedures for reusable containers?

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3. What are the cleaning procedures for equipment, tools and garbage cans?

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4. How do we effectively maintain farm tools and equipment?

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5. Give the general requirements for equipment maintenance.

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## Lesson

# 2

# Cleaning, Maintaining, Storing Tools/Equipment and Reporting Work Outcomes

Cleaning, Storing and Waste Management Protect Tools from the Elements  
Blades such as electric hedge trimmer blades, hoe, shovel, and other metal surfaces can be sprayed with lubricant oil. Spray the blades then turn them on to make sure oil works into all areas. All electrical and petrol gardening equipment need to be covered with a blanket or sheet if kept in the shed. This will prevent dust and dirt getting to them. Make it sure that all tools and equipment are well organized and maintained in good working condition. They should be stored in a separate secure place so that they are safe and easy to find. This is usually best done in a place which is separate from the office. Lost tools are expensive to replace, and much time can be wasted if they are not available and ready to use when needed. It is usual for those who have responsibility for looking after tools, equipment, and materials to keep an inventory (list) of these things.



## ***What's In***

**Multiple Choice.** Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. What quality of water is used for cleaning farm tools and equipment?  
A. adequate  
B. safe  
C. chlorinated  
D. heated
2. Why is it important to properly store re-usable containers?  
A. to avoid contamination  
B. to avoid pollution  
C. to prevent rusting  
D. to avoid pests
3. What appropriate farm tool will be used to remove as much as possible plant debris, soil, and residues of any kind?  
A. sprinkler  
B. knife  
C. garden hoe  
D. brush

4. Why is it important that the farm tools must be well-organized and maintained in a separate and secured place?
  - A. so that they are safe and secured
  - B. so that they are safe and look new
  - C. so that they are safe and easy to use
  - D. so that they are safe and easy to find
5. Which of the following is **NOT** a requirement in maintaining farm tools and equipment?
  - A. Obtaining a copy of the maintenance schedule recommended by the manufacturer
  - B. The person(s) performing the maintenance are skillful.
  - C. Retaining records of maintenance/service conducted
  - D. Specifying who is responsible for overseeing equipment maintenance and where the records are kept



## ***What's New***

### **General cleaning procedures**

The farmer and/or farm workers responsible for cleaning must adhere as much as possible to the following procedures:

- Be properly trained on the cleaning procedures.
- Develop a cleaning program and schedule according to the recommended frequency and the cleaning program should be monitored to ensure its effectiveness.
- Cleaning must not take place while fresh vegetables are being harvested, packed, handled, and stored.
- Water that is used for cleaning must be safe.
- The cleaning of equipment, tools, and containers must take place in a designated area away from field and the storage of agricultural inputs and fresh vegetables.
- When using cleaning and disinfection chemicals, the farmer and/or farm workers must become familiar with the instruction on the use of these products.
- Strictly adhere to all precautionary statements and mixing instructions.
- Protect equipment, tools, containers, and fresh vegetables when working with any chemicals.

### **Cleaning re-usable containers**

The farmer and/or farm workers responsible for cleaning re-usable containers must adhere as much as possible to the following procedures:

- Remove as much as possible plant debris, soil, and residues of any kind. Use a brush or appropriate tool when necessary.
- Inspect containers for physical damage which might injure, spoil, and contaminate fresh vegetables. If found, repair them.

- Inspect containers for any missed plant debris, soil, and residues. If found, re-clean.
- If cleaning and/or disinfection chemicals are used, follow label instructions for mixing.
- Rinse containers with clean water.
- When possible, containers should be placed under the heat of the sun for rapid drying.
- Store re-usable containers properly to avoid contamination.

### **Cleaning equipment, tools and garbage cans**

The farmer and/or farm workers responsible for cleaning the equipment (e.g. tables, racks, plastic sheet, etc.), tools (e.g. secateurs, knives, brushes, etc.) and garbage cans must adhere as much as possible to the following procedures:

- Remove as much as possible plant debris, soil, and residues of any kind. Use a brush or another appropriate tool when necessary.
- Inspect equipment for physical damage which might injure, spoil and contaminate fresh vegetables.
- Inspect equipment, tools, and garbage cans for any missed plant debris, soil, and residues. If found, clean again.
- If cleaning and/or disinfection chemicals are used, follow label instructions for mixing.
- As required, apply cleaning materials such as detergent and/or disinfection chemicals, and ensure that no spots are missed.
- Rinse with safe water. If there are parts of the equipment that cannot be rinsed with water, use a clean wet towel and follow the same procedures for cleaning.
- Ensure that small equipment and tools do not touch the ground floor after the cleaning procedure.
- When possible, place under the heat of the sun for rapid drying.
- Store equipment and tools properly to avoid contamination.

### **Cleaning areas for handling and storing fresh produce**

The farmer and farm workers responsible for cleaning these areas must adhere as much as possible to the following procedures:

- Unplug any electrical equipment and if possible, cover with plastic electrical motors, electrical boxes, connections, light fixtures, etc. Do not use packaging materials for this task.
- Remove trash and any accumulated plant debris from the floors.
- Using low pressure water, rinse the entire ceiling infrastructure and light fixtures to remove any dust and soil build up.
- Rinse walls, windows, and doors from the top downward. Rinse the entire floor surface to remove any soil build up. Be careful not to splash water onto equipment. If necessary, scrub areas with brush and cleaning materials such as detergent and ensure that no spots are missed.
- After scrubbing areas with cleaning materials, rinse surface areas as described previously. Wash out drains. Be careful not to splash water onto equipment.
- If cleaning and/or disinfection chemicals are used, follow label instructions for mixing.

### **Cleaning hygienic facilities**

The farmer and/or farm workers responsible for cleaning hygienic facilities must adhere as much as possible to the following procedures:

- Pick up trash from the floors and put in a trash can.
- By using the proper detergent, clean toilets, sinks, and any other fixtures.
- Using low pressure water, rinse the entire floor surface to remove any soil build up.
- If cleaning and/or disinfection chemicals are used, follow label instructions for mixing.
- As required, apply cleaning materials or disinfection chemicals to entire floor surface area. Scrub areas with brush if needed and ensure that no spots are missed.
- Rinse floor and drains.
- Remove excess water and allow drying out at room temperature.
- Ensure that hygienic facilities have enough toilet paper, soap, and disposable towel.

Make it sure that all tools and equipment are well-organized and in good working condition. They should be stored in a separate secure place so that they are safe and easy to find. This is usually best done in a place which is separate from the office.

Lost tools are expensive to replace, and much time can be wasted if they are not available and ready to use when needed. It is usual for those who have responsibility for looking after tools, equipment, and materials to keep an inventory (list) of these things.

It is a good idea to have a toolbox equipped with the necessary farm tools and materials ready to be picked up and taken to a job.

### **Tools and Equipment**

The tools and equipment to do the work are important and a secured place to store them is required. This could be a lockable shed or room within a building.

#### **Pointers to follow in storing tools and equipment:**

1. Have a designated place for each kind of tools.
2. Label the storage cabinet or place correctly for immediate finding.
3. Store them near the point of use.
4. Wash and dry properly before storing.
5. Store knives properly when not in use with sharp edge down.



Farm tools and equipment help make farm work easier. There are very many of them designed to do several functions. The design and shape of the tools and equipment should be given proper attention if they are to do their function for which they were made. This recalls how to effectively maintain farm tools and equipment.

## **Why do you have to maintain farm tools and equipment?**

1. They last longer when maintained.
2. Tools and equipment that are maintained work more efficiently.
3. When you keep tools and equipment in good shape, you reduce the risk of injury to the operator.
4. Regular maintenance reduces the cost of maintenance.

## **How to Effectively Maintain Farm Tools and Equipment**

### **1. Sharpen tool before and after use.**

When you sharpen tools, it reduces the amount of force you need to apply to accomplish the task. Blunt tools may break when used.

### **2. Oil or grease metal parts.**

This will prevent rusts of metal parts of tools and equipment. Oiling the movable parts makes the tools easy to work with. It also increases the efficiency of the tool or equipment.

### **3. Wooden handles should be strong.**

Make sure tools with wooden handles are strong and durable. If there is any defect, replace them.

### **4. Hang your garden tools.**

Keep your tools hung. Leaving them on the floor can cause rusts as they may meet moisture. Leaving tools on the floor may cause injury to persons or persons stepping on them may break or deform them, causing them to be unsuitable for work.

### **5. Store tools in their original cases.**

Some tools and equipment come in their special cases to keep them protected for damage. Make sure to clean and keep them in their original cases.

### **6. Use silica gel packs.**

Silica gel helps to keep tools dry in their cases. Use silica gel to prevent rust of tools and equipment with metal parts.

### **7. Dry Tools after Use**

After using tools or equipment, clean and make sure they are dried before packing or hanging them. This will prevent them from rusting.

Inasmuch as tools and equipment are vital to accomplishing tasks on the farm, it is important to always keep them ready for work.

All tools, equipment, and vehicles must be properly maintained so that workers are not endangered. Construction regulations require inspections of vehicles, tools, machines, and equipment before use.

Preventive maintenance is the systematic care and protection of tools, equipment, machines, and vehicles to keep them in a safe, usable condition that

limits downtime and extends productivity. We must always be aware that maintenance tasks themselves are potentially hazardous and can result in injury. The successful maintenance program has the following characteristics:

- well-organized and scheduled
- controls hazards
- defines operational procedures
- trains key personnel

The degree of detail to include in your company's program regarding equipment maintenance will depend on the kinds of tools/equipment used. Some construction equipment (e.g., cranes) have very specific inspection and maintenance requirements. Mobile heavy equipment (dozers, loaders, scrapers, etc.) may have different maintenance requirements. Passenger vehicles (company trucks, cars, and vans) may require only basic maintenance. Power tools should be maintained in good working order. This may be limited to ensuring that blades/bits are replaced when needed and that guards or other safety devices are operable, and any damaged electrical cords/plugs are repaired or replaced. Damaged or defective equipment/tools should be tagged and removed from service.

Most manufacturers can provide maintenance schedules for their equipment. Large companies with a fleet of vehicles/equipment typically have a comprehensive maintenance program due to the capital investment and/or leasing agreements. Smaller companies may lease equipment and maintenance services may be included in the leasing agreement.

**General requirements for equipment maintenance include:**

- Obtaining a copy of the maintenance schedule recommended by the manufacturer.
- Ensuring that maintenance is performed as required.
- Ensuring that the person(s) performing the maintenance are competent (e.g., licensed mechanic).
- Retaining records of maintenance/service conducted.
- Specifying who is responsible for overseeing equipment maintenance and where the records are kept.
- Setting up a system for removal and tagging of damaged or defective tools and equipment.



## ***What is It***

1. Give the steps to follow in storing tools and equipment.

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2. Why do you have to maintain farm tools and equipment?

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3. Enumerate and discuss ways of effectively maintaining farm tools and equipment.

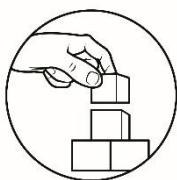
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4. Give the general requirements for equipment maintenance.

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## ***What's More***

### **Activity**

Perform the following cleaning process following the general cleaning procedures:

- A. Cleaning re-usable containers
- B. Cleaning equipment, tools and garbage cans
- C. Cleaning areas for handling and storing fresh produce
- D. Cleaning hygienic facilities
- E. Pointers to follow in storing tools and equipment
- F. How to effectively maintain farm tools and equipment



## ***What I Have Learned***

- General cleaning procedures
- Cleaning re-usable containers
- Cleaning equipment, tools, and garbage cans
- Cleaning areas for handling and storing fresh produce
- Cleaning hygienic facilities
- Pointers to follow in storing tools and equipment

### **Why do you have to maintain farm tools and equipment?**

1. They last longer when maintained.
2. Tools and equipment that are maintained work more efficiently.

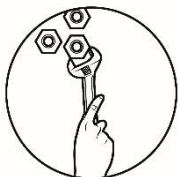
3. When you keep tools and equipment in good shape, you reduce the risk of injury to the operator.
4. Regular maintenance reduces the cost of maintenance.

### **How to Effectively Maintain Farm Tools and Equipment**

1. Sharpen tool before and after use.
2. Oil or grease metal parts.
3. Wooden handles should be strong.
4. Hang your garden tools.
5. Store tools in their original cases.
6. Use silica gel packs.
7. Dry tools after use.

### **General requirements for equipment maintenance include:**

- Obtaining a copy of the maintenance schedule recommended by the manufacturer.
- Ensuring that maintenance is performed as required.
- Ensuring that the person(s) performing the maintenance are competent (e.g., licensed mechanic);
- Retaining records of maintenance/service conducted.
- Specifying who is responsible for overseeing equipment maintenance and where the records are kept.
- Setting up a system for removal and tagging of damaged or defective tools and equipment.



## ***What Can I Do***

### **Enumeration: Give at least 5 procedures on the following:**

1. General cleaning procedures
2. Cleaning re-usable containers
3. Cleaning equipment, tools and garbage cans
4. Cleaning areas for handling and storing fresh produce
5. Cleaning hygienic facilities
6. Pointers to follow in storing tools and equipment

### **Why do you have to maintain farm tools and equipment?**

1. \_\_\_\_\_
2. \_\_\_\_\_

3. \_\_\_\_\_  
\_\_\_\_\_
4. \_\_\_\_\_  
\_\_\_\_\_

**Report work outcomes to the authority following established reporting formats.**

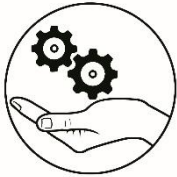


## ***Assessment***

**Multiple Choice.** Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

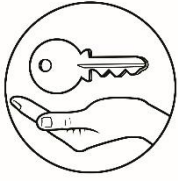
1. What quality of water is used for cleaning farm tools and equipment?
  - A. adequate
  - B. safe
  - C. chlorinated
  - D. heated
2. Why is it important to properly store re-usable containers?
  - A. to avoid contamination
  - B. to avoid pollution
  - C. to prevent rusting
  - D. to avoid pests
3. What appropriate farm tool will be used to remove as much as possible plant debris, soil, and residues of any kind?
  - A. sprinkler
  - B. knife
  - C. garden hoe
  - D. brush
4. Why is it important that the farm tools must be well-organized and maintained in a separate and secured place?
  - A. so that they are safe and secured
  - B. so that they are safe and looks new
  - C. so that they are safe and easy to use
  - D. so that they are safe and easy to find

5. Which of the following is **NOT** a requirement in maintaining farm tools and equipment?
- A. Obtaining a copy of the maintenance schedule as recommended by the manufacturer
  - B. The person(s) performing the maintenance is/are skilful
  - C. Retaining records of maintenance/service conducted
  - D. Specifying who is responsible for overseeing equipment maintenance and where the records are kept



## ***Additional Activities***

Interview some farmers about their best practices on how they clean, store and maintain tools and equipment according to manufacturer's specifications. Write notes here.



## ***Answer Key***

### Lesson 1

**Assessment**

1. B  
2. A  
3. C  
4. A  
5. D

**What's More**

**What I Know**

### Lesson 2

**Assessment**

1. B  
2. A  
3. D  
4. D  
5. B

**What's More**

**What I Know**

## References

- <https://gltnhs-tle.weebly.com/lesson-45.html>
- <https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/food-safety/good-agricultural-practices/6-4-storage-disposal-of-farm-wastes>
- <http://organic.da.gov.ph/images/downloadables/PNS/PNS-Organic-Agriculture-2016-final.pdf>
- <https://www.sgs.ph/en/sustainability/facilities-and-production/waste-and-recycling-services/environmental-waste-management-services>
- <https://www.sgs.ph/en/sustainability/facilities-and-production/waste-and-recycling-services/environmental-waste-management-services/waste-care>
- <https://www.gmpsop.com/receipt-storage-issue-and-return-of-incoming-materials/>
- [https://www.researchgate.net/publication/308880744\\_AGRICULTURAL\\_WASTE\\_CONCEPT\\_GENERATION\\_UTILIZATION\\_AND\\_MANAGEMENT](https://www.researchgate.net/publication/308880744_AGRICULTURAL_WASTE_CONCEPT_GENERATION_UTILIZATION_AND_MANAGEMENT)
- <https://www.bioenergyconsult.com/agricultural-resources-in-philippines/>
- <http://www.worldscientificnews.com/wp-content/uploads/2017/07/WSN-811-2017-1-52-1.pdf>
- <https://gltnhs-tle.weebly.com/lesson-45.html>
- [https://www.google.com/search?sxsrf=ALeKk015KJmaV\\_F3ZFv\\_TQq4qxvV\\_iMSYA:1590855817238&q=proper+storage+of+tools+and+equipment&sa=X&ved=2ahUKEwingIDf\\_9vpAhWnyYsBHcxzDmlQ1QIoAnoECAsQAw&biw=1280&bih=578](https://www.google.com/search?sxsrf=ALeKk015KJmaV_F3ZFv_TQq4qxvV_iMSYA:1590855817238&q=proper+storage+of+tools+and+equipment&sa=X&ved=2ahUKEwingIDf_9vpAhWnyYsBHcxzDmlQ1QIoAnoECAsQAw&biw=1280&bih=578)
- <https://www1.health.gov.au/internet/publications/publishing.nsf/Content/ohp-enhealth-manual-atsi-cnt-1~ohp-enhealth-manual-atsi-cnt-1-ch7~ohp-enhealth-manual-atsi-cnt-1-ch7.8>

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