

HORTICULTURE

Preparing Farm Tools, Implements, and Simple Equipment for Agricultural Farm Operations

This instructional material was collaboratively developed and reviewed by educators from public and private schools, colleges, and or/universities. We encourage teachers and other education stakeholders to email their feedback, comments, and recommendations to the Department of Education at action@deped.gov.ph.

We value your feedback and recommendations.

**Department of Education
Republic of the Philippines**

Technology and Livelihood Education (TLE) – Grade 9

Learner's Material

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INTRODUCTION

This Learner's Materials on Conducting Pre-Agricultural Farm Operations contains various Learning Competencies designed to develop the knowledge, skills, and attitude of Grade 9 Technology and Livelihood (TLE) students. It covers four (4) modules namely: Personal Entrepreneurial Competencies (PECs) across the environment and market, 2. Preparing farm tools, implements, and simple equipment, 3. Preparing and maintaining farm tools, implements, simple equipment, and facilities, and 4. Securing farm tools, implements, simple equipment, and facilities. Each module is subdivided into several lessons with the following parts: I – Introduction, giving an overview of the lesson; II – The Learning Competencies/Objectives contain specific topics about a certain Learning Competency; III – The Pre-Diagnostic Assessment provides evaluation of the prior learning of students; IV – the Reading Resources and Instructional activities include the content and activities about what the students must know, what to process, what to reflect and understand, and what to transfer. These activities could be done in school, at home, and in the community. V –The Summative Assessment evaluates how much the students have learned; and VI – The Summary/Synthesis/Feedback give generalization and enhancement on a specific module. A glossary section is at the back page of the Learner's Materials as further reference, and a List of References to acknowledge the sources of the ideas taken from them.

Conducting pre-agricultural farm operations is one of the Core Competencies in Agricultural Crop Production NC II. Students must be able to take the five (5) core competencies to finish the course. The teacher must conduct Institutional Assessment towards the end of the school year to evaluate the underpinning knowledge, skills, and attitudes of the students based from the set of criteria in the Training Regulations/prepared by Technical Education and Skills Development Authority (TESDA).

MODULE 2

Conducting Pre-agricultural Farm Operations

TOPIC: Preparing Farm Tools, Implements, and Simple Equipment for Agricultural Farm Operations

Content Standard	Performance Standard
The learner demonstrates understanding in preparing farmtools, implements, and simple equipment for agricultural farm operations.	The learner independently prepares farm tools, implements, and simple equipment for agricultural farm operations in accordance with the Manufacturer's Manual.



Lesson 1: Preparing Farm Tools, Implements, and Simple Equipment for Agricultural Farm Operations

Introduction

The lesson deals with the identification and classification of tools, implements, and simple equipment according to use. It also includes the pre-operative check-up of farm tools, implements, and simple equipment for agricultural farm operations.

Learning Competencies/Objectives

At the end of the quarter, the students are expected to:

1. Identify and classify tools, implements and simple equipment according to use;
2. Perform basic operative check-up of farm tools, implements, and simple equipment in accordance with the manufacturer's manual.
3. Conduct beginning inventory of tools, implements, and simple equipment; and,
4. Segregate and treat tools with wear and corrosion according to a maintenance schedule.

Pre-Diagnostic Assessment:

A. Choose the best answer by writing only the letter in your quiz notebook.

1. Farm tools, implements and equipment are very important in agricultural crop production because:

- A. They make work faster
- B. They make work easier
- C. They save time and effort
- D. All reasons above are correct

2. Use the appropriate tool for a specific task will result to quality performance.

Which of the following tools is least used for digging garden plots?

- A. Bolo
- B. Grub-hoe
- C. Pick mattock
- D. Light hoe

3. Which of the following harvesting tools is seldom used in harvesting cucurbits and solanaceous crops?

- A. Harvesting knife
- B. Harvesting scissors
- C. Pruning shears
- D. Scythe

4. It is a tool with one end flattened and the other pointed at a right angle toward its handle.

- A. Bolo
- B. Crowbar
- C. Pick mattock
- D. Spade

5. Small seeded vegetable crops are usually pre-germinated to attain quality seedlings. Which among the following methods of seedling production is not applicable for planting in a wide production area?

- A. Seed box
- B. Seedling tray
- C. Seedbed
- D. Individual plastic bags

6. Which among the following are **not** classified as digging tools?
- A. Shovel, spade
 - B. Bolo, knife
 - C. Pick-mattock, grub-hoe
 - D. Crowbar, post hole digger
7. Farm equipment are used to facilitate initial tillage operation in a wide tract of land. Which among the following equipment is used to perform the task stated above?
- A. Tractor with disc plow
 - B. Tractor with disc harrow
 - C. Tractor with rotavator
 - D. Tractor with seed driller
8. It is a tool with tines used to loosen the soil, dig out root crops, and turn over materials in a compost heap.
- A. Hand fork
 - B. Spading fork
 - C. Pick-mattock
 - D. Toothharrow
9. The inventory of tools, implements and simple equipment is conducted for the following reasons except:
- A. To find out lost items
 - B. To segregate and repair damaged tools
 - C. To check the items that are present
 - D. To determine available tools, implements, and equipment for use
10. Which among the following is **not** a cultivating tool?
- A. Hand fork
 - B. Spading fork
 - C. Hand trowel
 - D. Hand cultivator



What to KNOW

Activity 1

Let's find out how much you know about farm tools, implements, and simple equipment. Some of you may be sons and daughters of farmers who have some experience in farming. In this activity you will do simple recall or will give ideas on the topics you will discuss with your Learning Barkada.

Divide the class into four groups with equal members to form four Learning Barkadas. Select your leader and the rapporteur who will take down notes on discussions/decisions your group will make.

The following topics will be picked by your leader for you to discuss.

1. How to differentiate farm tools, implements, and simple equipment from each other?
2. How are tools classified? Give at least 3 examples under each classification that you know.
3. What is an inventory? Prepare an inventory form for tools, implements, and simple equipment for your school.
4. Why is a pre-operative check up of tools, implements, and simple equipment necessary?

The availability of farm tools, implements, and simple equipment is one of the important factors needed to make farm work easier, better, and faster. These make tools, implements, and equipment play a very important role in successful agricultural crop production operations. However, their availability alone does not guarantee success in production if the farmer/owner does not know how to use them. For the farmer/owner to perform agricultural operations successfully, he/she must have a good working knowledge of tools, implements, and equipment prior to use.

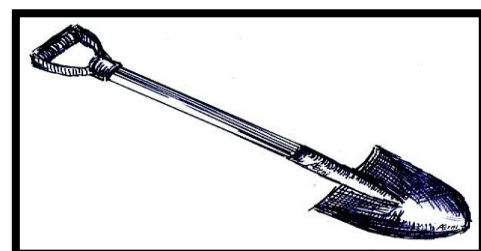
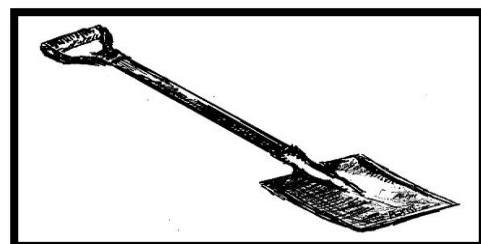
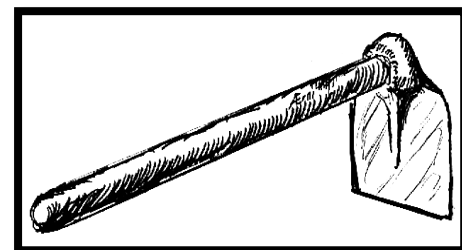
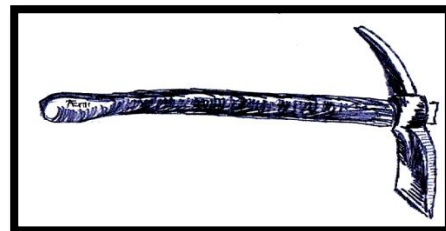
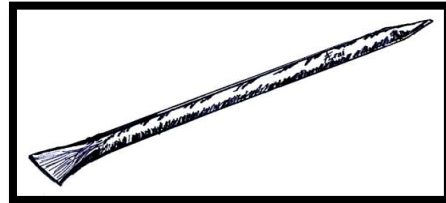
Reading Resources and Instructional Activities

Classifications of tools

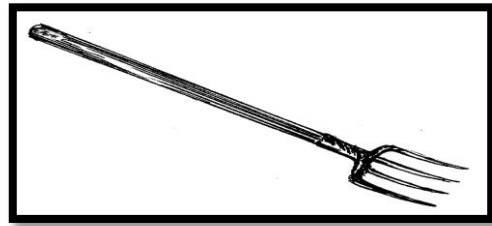
According to Asuncion, (1983), the following are the farm tools classified according to use:

Digging tools

1. **Crowbar** (*bareta*) is used for digging big holes and for digging out big stones tree and stumps.
2. **Pick-mattock** (*mattock*) is used for digging canals, breaking hard topsoil (flattened blade), and digging up stones and tree stumps (pointed portion).
3. **Grub-hoe** (*asarol*) is used for breaking hard topsoil and pulverizing soil
4. **Spade** is used for removing trash or soil, digging canals or ditches, and mixing soil media.
5. **Shovel** (*pala*) is used in removing trash, digging loose soil, moving soil from one place to another, and for mixing soil media.

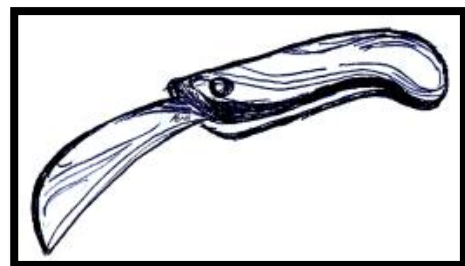
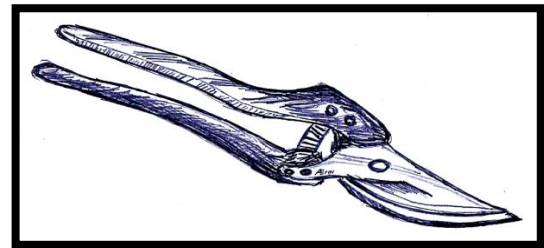


6. **Spading fork**(*tinidor*)is used for loosening the soil, digging out root crops, and turning over the materials in a compost heap.



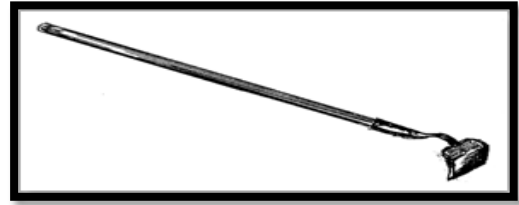
Cutting Tools

1. **Bolo** (*itak*)is used for cutting weeds, bamboo poles and pegs use for construction and trellis.
2. Pruning shears are used for cutting branches of planting materials and unnecessary or unproductive branches of plants.
3. **Axe** is used for cutting trunks or branches of trees and bigger posts.
4. **Knives** are used for cutting planting materials, harvesting, and used in performing other operations in crop production.

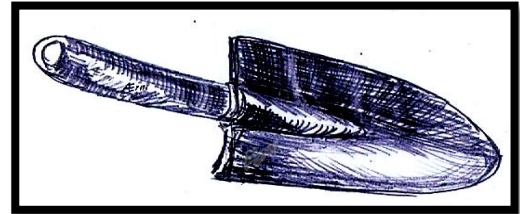


Cultivating tools

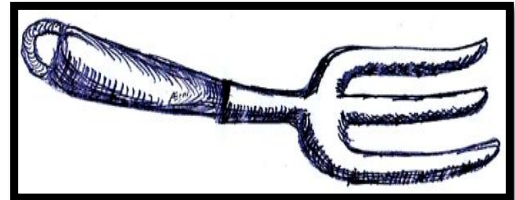
1. **Light hoe** is used for loosening, leveling, and digging out furrows for planting.



2. **Hand trowel** is used for loosening or cultivating the soil around the growing plants and putting small amount of manure and compost in the soil.



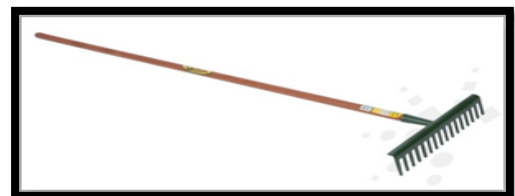
3. **Hand fork** are used for cultivating the soil in between rows of plants.



4. **Hand cultivator** (*pangbakulkul*) is used for cultivating the garden plot by loosening the soil and removing weeds growing around the plant.

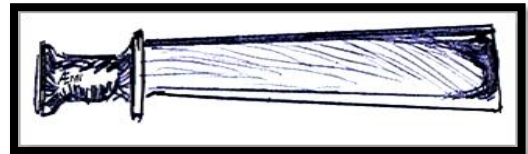
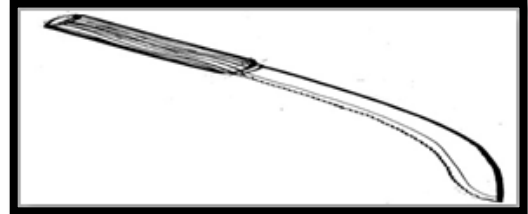


5. **Rake** (*kalaykay*) is used for cleaning the ground and leveling the topsoil.



Harvesting tools

1. **Harvesting knives/scissors/pruning shears** are used for harvesting vegetables crops.
2. **Scythe** is used for harvesting rice and for cutting grasses for animal feeds.
3. **Bolo (*itak*)** is used for harvesting bananas, sugarcane, and other crops.



Carpentry tools

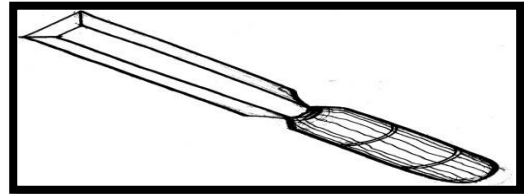
1. **Hammer** is used to draw and remove nails and to drive nails into wood .
2. **Cross cut saw** is used to cut wood when doing some repair of tools, constructing compost piles and fixing vicinity fence.
3. **Pliers** are used in repairs of tools and other carpentry works.



4. **Screw drivers** are used tighten and loosen knots and bolts.



5. **Chisel** is used smoothen wooden handle of garden tools and implements.

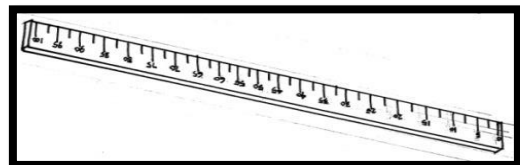


Measuring tools

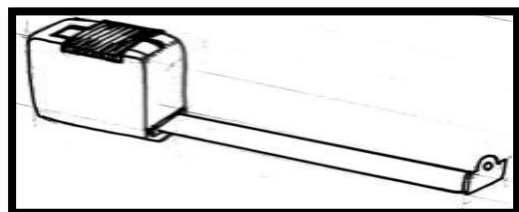
1. **Weighing balance** is used for weighing Harvests and fertilizers.



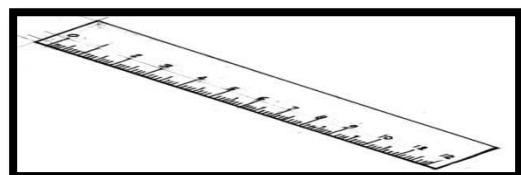
2. **Meter stick** is used for measuring garden plots and heights of plants.



3. **Steel tape** is used for measuring distance of planting in lay outing an area.



4. **Foot rule** is used for measuring the height of seedlings.



Other materials

1. **Knapsack sprayer** is used for applying insecticides, herbicides, and foliar fertilizers.
2. **Trigger sprayer** is used in applying insecticides/fungicides in seedboxes/seedtrays/seedbeds.
3. **Sprinklers** are used for watering Seedlings and other plants, such as vegetables and ornamentals.
4. **Wheel barrow** is used for hauling and transporting growing media, fertilizers, and farm supplies.
5. **Crates** are used for carrying harvests (fruits, vegetables, and cut flowers) from the point of production to the market.
6. **Seed trays** are containers used for raising or growing seedlings.



7. **Seed boxes** are containers used in growing vegetable seedlings.



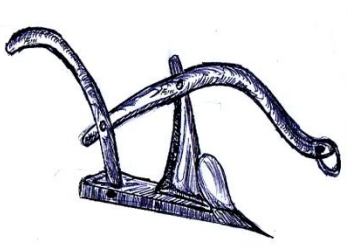
Farm Implements

Farm implements are accessories pulled by draft animals or mounted to machineries that are usually used in land preparation. They are usually made of an iron or other metals.

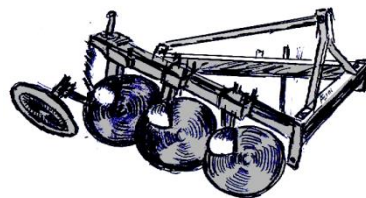
Examples:

1. **Plows.** They refer to farm implements used in land preparation for agricultural crop production. They are either pulled by a draft animal or a tractor. The plow is specifically used for tilling wide areas, making furrows, and for inter- row cultivation.

Plows pulled by draft animals are made of either pure metal or wood and their combination of metal and wood.

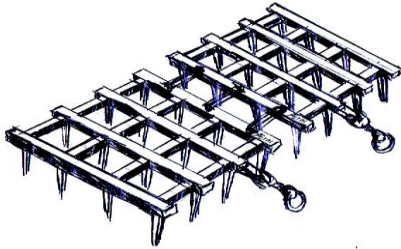


Native plow

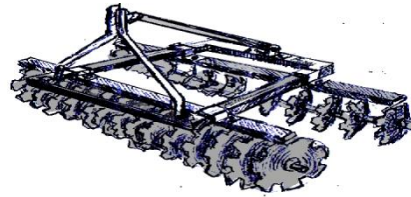


Disc plow

2. **Harrow.** The native wooden harrow is made up of wood with metal teeth and pulled by draft animals while disc harrow is made up of metal mounted to a tractor. Harrows are used for pulverizing the soil.



Native Wooden Harrow



Disc harrow

3. **Rotavator.** The rotavator is an implement mounted to a tractor also used for pulverizing the soil.



Rotavator

Farm Equipment

Farm equipment are machineries used in land preparation and in transporting farm inputs and products. To use these machineries, a highly skilled operator is needed to perform the task.

1. **Hand tractor** is used to pull a plow and harrow in preparing the field for planting.
2. **Four-wheel tractor** is used to pull a disc plow and a disc harrow in preparing a much wider area of land.
3. **Water pump** is used to draw water from a source for use in irrigating the field.



Hand Tractor



Four Wheel Tractor



Water Pump

PRE-OPERATIVE CHECK UP OF FARM TOOLS, IMPLEMENTS, AND SIMPLE EQUIPMENT

Inventory of Farm Tools, Implements and Simple Equipment

An inventory is initially prepared to check the items that are present, available for use, operational, and adequate for the training activities.

An inventory should be done at the beginning of the school year to provide a list of the existing tools, implements, and equipment. It is important because you will find out how many are serviceable and need repair. As a result, accidents can be prevented because damaged tools will be brought to the farm shop for repair. Students must be aware of their responsibilities as borrowers. They should replace lost and repair damaged tools.

Likewise, a yearend inventory is essential to ensure that the tools, implements, and equipment are still complete and in good condition, ready for use in the next school year.

Below is a sample of an inventory record form.

Table 1. Sample Inventory Record

Date	Unit	Qty	Item	Remarks	
				In Good condition	Needs Repair
6/2/2014	Pcs	25	Bolo	20	5
	Unit	2	Hand tractor with complete accessories	2	
	Set	3	Soil-testing kit (STK)	3	

Imagine that the long, hot summer vacation has finally come to an end. It is the beginning of the school year and you are ready to start working in your vegetable gardens. But before you start, check the tools, implements, and equipment you plan to use.

Dressed in your working clothes and armed with your personal protective equipment (PPE), proceed to the shop to retrieve your tools so that you can start clearing away the last remnants of the summer and begin breaking the soil for a new year. Imagine your frustration when you see that the tools covered with rust and dirt from the last vacation. It seems that on this nice day, you will be spending more time cleaning and repairing tools than actually using them.



What to PROCESS

Activity 2

In Activity 1, a group was assigned to give the classification of tools. After discussing this topic, the group was requested to post their output in front of the room for the class to assess. Find out how many correct ideas they have.

Now, after learning the different classifications of tools, all Learning Barkadas will classify the tools in your tool room. List down all the tools under each classification. Present your output to the class in 3 minutes. The Learning Barkada that will get the most number of correct answers will be rated 5, 4, for the second highest, etc.



What to REFLECT and UNDERSTAND

Activity 3

You have just learned the importance of having an inventory of tools. You have also seen an example of an inventory record form. You already know the classifications of tools. This time, each Learning Barkada will prepare an inventory of tools according to their classification. Prepare your output on a short bond paper after encoding it.



What to TRANSFER

Activity 4

Farmer – Student Encounter

Interview a farmer about the farm tools, implements and simple equipment he has. Construct interview questions and show them to your teacher for correction and approval. To facilitate your task, prepare a table where you will indicate the tools, implements, and equipment the farmer possess. Tools should be listed under each classification. Compare your output with that of your Learning *Barkada*.

Present your output to the class.

Summary/Synthesis/Feedback

Tools, implements, and simple equipment facilitate work. As the user, bear in mind that safety precautions on knowing the proper use of these tools can lead to a safe and successful endeavor. Before using any of the tools, implements and equipment, always check whether or not they are still usable or serviceable. It is also

good practice to always check with or refer to the manual of operations as prescribed by the manufacturer. When necessary, seek assistance of a skilled operator.

Keep a record of tools, implements, and simple equipment so you know what tools are stored in the tool room.

Tools that are defective should be segregated and fixed immediately to prevent accidents.

Summative Assessment

Multiple Choice

Directions: Choose the best answer by writing only the LETTER in your quiz notebook.

1. Which of the following harvesting tools is seldom used in harvesting cucurbits and solanaceous crops?
 - A. Harvesting knife
 - B. Harvesting scissors
 - C. Pruning shears
 - D. Scythe
2. Which among the following are **not** classified as digging tools?
 - A. Shovel, spade
 - B. Bolo, knife
 - C. Pickmattoc, grub-hoe
 - D. Crowbar, post hole digger
3. It is a tool with one end flattened and the other pointed at a right angle toward its handle.
 - A. Bolo
 - B. Crowbar
 - C. Pick mattock
 - D. Spade

4. Using the appropriate tool for a specific task will result to quality performance. Which of the following tools is least used for digging garden plots?
- A. Bolo
 - B. Grub-hoe
 - C. Pick-mattock
 - D. Light hoe
5. Farm equipment are used to facilitate initial tillage operation in a wide tract of land. Which among the following equipment is used to perform the task stated above?
- A. Tractor with disc plow
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 - B. Spading fork
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 - B. Spading fork
 - C. Pickmattock
 - D. Tooth harrow

9. Small seeded vegetable crops are usually pre-germinated to attain quality seedlings. Which among the following methods of seedling production is **not** applicable for planting in a wide production area?
- A. Seed box
 - B. Seedling tray
 - C. Seedbed
 - D. Individual plastic bags
10. The inventory of tools, implements and simple equipment is conducted for the following reasons except:
- A. To find out lost items
 - B. To segregate and repair damaged tools
 - C. To check the items that are present
 - D. To determine available tools, implements, and equipment for use

Summary/Synthesis/Feedback

The lesson in this module on horticulture was an eye opener to what you can do in the workplace. The course is designed to prepare you to be farmers or farm technologists in the future; that is, if you decide to become either a farmer or farm technologist. But even if you don't, you will surely learn a lot from the activities in this model and thus develop an appreciation for the valuable contributions of farmers to food production.

The different knowledge and skills acquired in horticulture are essential for you to become good crop producers. Such factor in the preparation of farm tools, implements and simple equipment for horticultural farm operations will help you a lot. Likewise, it is expected that this module will help you develop some of the skills required on pre-horticultural farm operations that may someday enable you to prosper in your venture into agricultural crop production.

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