HORTICULTURAL CROPS PRODUCTION

Level I

Learning Guide#41

Unit of Competence: Support natural area conservation Works

Module Title: Supporting natural area conservation Works

LG Code: AGR HCP1 M11 LO1-LG-41

TTLM Code: AGR HCP1 TTLM 1219v1

LO 1: Prepare materials, tools and equipment for conservation work

Instruction Sheet	Learning Guide #41

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying materials, tools and equipment
- Checking faulty or insufficient materials, tools and equipment
- Loading and unloading materials
- Selecting suitable personal protective equipment (PPE)
- Identifying and reporting OHS hazards

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify materials, tools and equipment
- Check faulty or insufficient materials, tools and equipment
- Load and unload materials
- Select suitable personal protective equipment (PPE)
- Identify and report OHS hazards

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1-5.
3. Accomplish the “Self-check” in page 7, 10,14, 18 and 23
4. If you earned a satisfactory evaluation precede to “Operation Sheet” in page 24-26. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity.
5. Do the “LAP test” in page 27 (if you are ready) and show your output to your teacher. Your teacher will evaluate your output either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work. But if satisfactory you can proceed to Learning Guide ----------.

Information Sheet-1	Identifying materials, tools and equipment

1.1 Definition: natural area conservation defined as an area of unique scenic, historic, geologic, or ecological value and of sufficient size and character to allow its maintenance in a natural condition by the operation of physical and biological processes, usually without direct human intervention.

These areas are set aside to provide locations for scientific observation of natural systems, to protect outstanding examples of natural interest and beauty. Natural areas can serve as refuges for species of plants, such as demonstrated on different geotropically fruit tree (mango, avocado, apple), stimulant and spice crop. The horticultural crop conservation is an activity that are determining the cropping activity either it could be in the farm, garden or indoor. Then the activities are land preparation, fertilization, irrigation, cultivation, weeding, harvesting, etc. according to each cropping system, therefore you will provide support on these activities by preparing the land as your supervisor directs you as the enterprise standard or work place information

The guidelines governing the administration of natural areas

- Human habitation will not be permitted, except that primitive type, backpack camping may be permitted in designated areas only.
- Access for all but essential administrative activities will be restricted to foot trails.
- Buildings and other improvements will be restricted to the minimum required for public health, safety, and interpretative aids.
- Timber harvesting will not be permitted except as may be required for maintenance of the public safety.
- Rights of way, leases, and mineral development will be prohibited, provided, however, that subsurface oil and gas rights may be leased where no surface use or disturbance of any kind will take place on the natural area.

1.2 The importance of conserving or protecting natural areas

It is important to preserve our natural area's because they provide us with resources that we use every day, the trees also help reduce the amount of greenhouse gasses in the atmosphere causing the Earth to maintain a stable climate especial fruit tree and perennial stimulant and spices.

Goal/aim:

- ✓ Protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water.
- ✓ Moreover, the Act contains specific requirements for the designation and protection of critical areas, as wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas and geologically hazardous areas.
- ✓ The Act requires jurisdictions to adopt policies and implementing regulations to ensure the protection of critical areas.

1.3 Identify materials, tools and equipment for conservation work

Before conducting any conservation work for horticulture crops we need to identify all materials, tools and equipments and prepare a checklist. so, that all materials are present in the working area. Depending on the conservation work different tools and equipments can be used the following are some of them.

- **Secateurs**

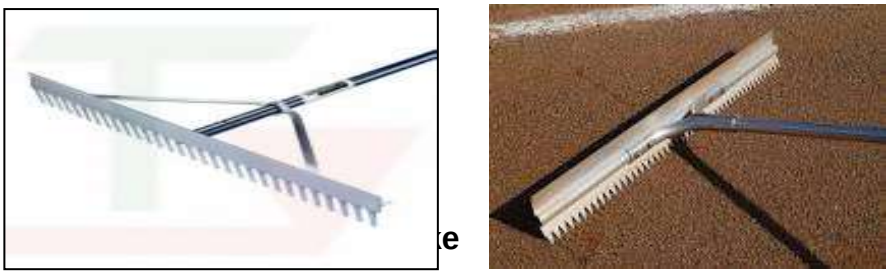
  They are strong enough to prune hard branches of trees and shrubs, sometimes up to two centimeters thick. They are used in gardening, arboriculture, farming, flower arranging, and nature conservation where fine scale habitat management is require.


fig.1.1 *Secateurs*

Spade is a tool designed primarily for the purpose of digging or removing earth. With a metal tip, a spade can both break and move the earth in most situations, increasing efficiency. Small spade for clay soil; the other one for sandy soil and loamy soil.

fig 1.2 different types of spade

Rake: is a tool used to gather or loosen material or to grade or level a surface. There are two major kinds of rakes: an attachment for a tractor and a hand tool.



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shovel is a tool for digging, lifting, and moving bulk materials, such as soil, coal, gravel, snow, sand

fig.1.4 different types of shovel

Augers is a spiral shaped tool that moves materials or liquids from one area to another. When an auger is rotated, the materials or liquids move along the spiral to the desired location. A drill bit, which is the most commonly known auger, uses the design to remove the shavings and other debris from the hole while it is being drilled.

Hand Auger is a tool, often made of steel that is used to bore a hole. Typically, hand augers are used to create holes in dirt, ice, or wood. fig 5

fig.1.5 different types of auger

Watering/spray equipment

Brass Hose Fittings Sprinkler

The hedge shear is manually operated hand tool for pruning, trimming and cutting of hedges and shrubs. The hedge shear is used for pruning and trimming of hedge and giving it desired shape. It is also used for cutting of shrubs and removing of haphazard growth in gardens and lawns.

fig.1.6 hedge shear

Self-Check -1	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What do mean by natural area conservation?(3points)
2. What is the importance of conserving or protecting natural areas?(5points)
3. List atleast five materials, tools and equipment used for conservation work area local available(6pts).

Note: **Satisfactory rating - 12 points and above** **Unsatisfactory - below 12 points**

You can ask your teacher for the copy of the correct answers.

Answer sheet

Score = _____

Rating: _____

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Information Sheet- 2	Checking faulty or insufficient materials, tools and equipment

2.1 Checking materials, tools and equipment

We check all materials, tools, and equipment with insufficient or faulty items reported to the supervisor. A materials coordinator is chiefly responsible for the acquisition and inventory management of materials required for companies/conservation work. Materials coordinators can assume different duties and sometimes different titles based on the type of the conservation work. These duties may also require different education or experience backgrounds depending on the nature of the acquired materials.

Before and after using the materials, tools and equipments for conservation work it is very important to check the equipment. This makes the equipment free from some things unpleasant, undesirable, damaging that happen unexpected during work operation in the work place. If the materials are damaged it is possible to report to the supervisor immediately for maintenance.

Preparing checklist is necessary for all materials, tools and equipment before conducting conservation work area.

2.2 Checking and reporting of faulty and insufficient materials of all type is the first step

Check all the tools and equipment's before use, ask question like:-

- ✓ Are all the materials, tools and equipments ***functional and sufficient*** in number for the activities?
- ✓ Are all ***clean*** of any contaminants materials, tools and equipments?
- ✓ Check and report to your supervisor how much of the materials he provided in the list are functional and how much of them are faulty.
- ✓ Are the functional tools and equipment's sufficient enough to the area conservation work with the available labour power.

- ✓ After reporting the faulty and functional materials your supervisor will guide you what to do if there is insufficiency of material for that particular horticultural crop work.

Preparing checklist is necessary for all materials, tools and equipment before conducting conservation work. **Table:1** ways of reporting faulty material

No	**Description**	**Yes**	**No**
1	Are all materials, tools & equipment available?		
2	Are they sharpened?		
3	Are the tools used for correct use?		
4	Are damaged tools departed from normal?		
5	Are the worn out tools replaced?		
6	Are dull tools sharpened?		

Self-Check -2	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1.How to check and report faulty and insufficient materials?(6pts)

2. Why check and report faulty and insufficient materials? (6pts)

3. When to check material faulty? (4pts)

Note: **Satisfactory rating - 14 points and above** **Unsatisfactory - below 14 points**

You can ask your teacher for the copy of the correct answers

Answer sheet

Score = _____

Rating: _____

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Information Sheet-3	Loading and unloading materials

3.1 Loading and unloading of materials

To do the area conservation work we need to properly prepare the working materials in a working area for this purpose materials should be transported from where they are stored to the working site. In this regarded the required type and their sufficient number is already decided by the supervisor, hence these materials will be counted and will be loaded on a transporting vehicle and in the working site these materials will be unloaded.

3.2 Proper handling of the items or materials during loading and unloading

We already separated faulty materials not to be transported to working area, however while loading and unloading we should take the necessary care not to break, holing, etc. and not to make any of these materials faulty for the next time work, by properly handling materials we can prolong the time of service they can give and also minimize the cost of buying new materials in replacement to faulty once. Therefore the care we should take during loading and unloading includes the following dos and undoes.

- Do not through materials from ground on to the vehicle (can be any transporting system)
- Do not through materials from vehicle on to ground
- Hold and place materials one by one rather than making more than one or two
- When placing materials on the vehicle place them in stable position
- Place materials on ground in stable position
- Place similar materials together on the vehicle while loading and on ground when unloading

3.3 Taking care of vehicle (can be any transporting system) during loading and unloading

As already mentioned in the above topic, if materials will not be loaded properly, it is not only the materials that will be affected but also the vehicle as well. If we through materials from ground on vehicle we could break the glasses of the vehicle, we might hurt the loading surface and lead to fast

depreciation of the vehicle. We might also create a problem when unloading materials improperly.

The first principle in loading and unloading materials is hold the material properly in both hands, keeping balance and safely placing the materials on vehicles or on ground, for these purpose at least two or more people are necessary one or more on the vehicle and one or more on ground.

3.4 Loading/unloading materials

Demonstrate correct manual handling:

- ✓ Be sure to bend your knees and lift with your legs as you loading material, be careful not to twist with heavy load.
- ✓ When using a shovel to move large quantities of material, position your body and your work. So you don't have to turn or twist.
- ✓ For example, if you're shoveling top soil into a wheel barrow facing your target, and in a position relative to the pile that allows you to scoop, lift and dump without twisting.

3.5 Basic Safety Procedures

The following rules apply for loading and unloading hazardous materials:

- ➢ Secure packages, including palletized loads, against shifting within a vehicle during transportation. Securing can be accomplished through tying, blocking and bracing the load. Secure bottles of compressed gases to prevent damage to their valves.
- ➢ Load packages with orientation marks (up arrows) so that the marks remain pointed up.
- ➢ Do not allow any smoking or any source of ignition on or near the vehicle when loading/unloading flammable materials.
- ➢ Set the handbrake on the vehicle before loading/unloading.

Note: Avoid lifting from the floor whenever possible. If you must lift from the floor, do not bend at the waist. The techniques shown below help the worker to keep the spine in a safer position while lifting from the floor.





Lean the sack onto Your kneeling leg	side the sack up onto your kneeling leg	*Slide the sack onto the other leg*	*As you stand up, keep the sack close to your body*	*Hold it both of your hand*

figure 3.1 load and unload safety procedure

Self-Check -3	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What are the basic safety procedures in loading/unloading materials?(10).
2. How can you minimize damage? EXPLAIN briefly(10).

Note: **Satisfactory rating - 18 points and above** **Unsatisfactory - below 18points**

You can ask your teacher for the copy of the correct answers.

Score = _____

Rating: _____

Answer sheet

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Information Sheet-4	Selecting suitable personal protective equipment (PPE)

4.1 Selecting personal protective equipments

PPE is defined in the Regulations as ‘all equipment (including clothing affording protection against the weather) which is intended to be work or held by a person at work and which protects him against one or more risks to his health or safety.eg. Safety helmets, gloves, eye protection, high visibility clothing, safety footwear and safety harnesses.

Selecting implies the process of ensuring that the personal protective equipment is directly related in protecting the person as related to the job performed. In the process one has to know the likely risks that might arise from the agricultural crop works. Therefore during loading and unloading the likely risks could be to be hit/ injured by the materials, mostly on hands and legs or foot, hence in addition to the care that we take during loading and unloading we need to protect our hands and legs. Therefore from among other protective equipments we select boots and gloves. In similar manner you need to identify the likely risks that might occur on your body or sense organs from specific agricultural crop works, then once you identify the risks it is necessary to select the necessary personal protective equipment that fit the body or the sense organ involved.

4.2 **Checking suitability of personal protective equipment**

Checking involves many things such as the checking in faultiness of the personal protective equipment, checking the size, and checking the sufficiency in number of the materials for the available work force. If one of these is missing based on the level of the risk that occurs the expected risk could occur. Therefore don’t proceed a job until the problems with the PPE will be solved. The size of PPE should be fit with your size, if the PPE is faulty it should be maintained or a new one should be provided, and if the number is not sufficient only people with the PPE should work the job. Hearing protection and respiratory protective equipment provided for most work situations are not covered by these regulations because other regulations apply to them. However, these items need to be compatible with any other PPE provided.

Protective equipment that must be available

These include:

- Rubber or leather gloves
- Overalls.
- Face mask and ear
- Steel capped boots/shoes
- sunscreen lotion
- sun hat
- safety goggles


Gloves


Eye glass


Boot


Hat


Overalls

Factors Influencing PPE Selection

When you are selecting PPE, consider three key things

- ***Type of exposure anticipated-such as:-***
  - Splash/spray versus touch
  - Category of isolation precautions
- ***Durability and appropriateness of the PPE for the task***:-
- ***Fit:*** - PPE must fit the individual user, and it is up to the employer to ensure that all PPE are available in sizes appropriate for the workforce that must be protected.

Dos and Don'ts of Glove Use

- Work from "clean to dirty"
- Limit opportunities for "touch contamination" protect you, others, and the environment
- Don't touch your face or adjust PPE with contaminated gloves
- Don't touch environmental surfaces except as necessary

Change gloves

- During use if torn and when heavily soiled (even during use on the same patient)
- After use on each patient

Key Points about PPE

- ✓ Do before going to worksite

- ✓ Use carefully don't spread contamination
- ✓ Remove and discard carefully, after finishing work
- ✓ Immediately perform hand hygiene

Sequence for removing PPE

- ⊗ Gloves
- ⊗ Face shield or goggles
- ⊗ Gown
- ⊗ Mask

  or respirator

Hand Hygiene

- ⌑ Perform hand hygiene immediately after removing PPE.
- ⌑ Wash hands with soap and water or use an alcohol-based hand rub

Self-Check- 4	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What are the main common personal protective that used in the natural area conservation work? Explain them briefly(10pts)

2. Discuss on the sequence for removing PPE(5pts)

Note: **Satisfactory rating - 15 points and above** **Unsatisfactory - below 15points**

You can ask your teacher for the copy of the correct answers.

Score = _____

Rating: _____

Answer sheet

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2._____
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Information Sheet-5	Identifying and reporting OHS hazards

Definition: Occupational health and safety is concerned with health and safety in its relation to work the working environment.

The aims of occupational health

1. The ***promotion and maintenance*** of the highest degree of physical, mental and social well being of workers in all occupation
2. The ***prevention amongst w***orkers of departures from health caused by their working conditions.
3. The ***protection of workers in their employmen***t from risks resulting from factors adverse to health.
4. The ***placing and maintenance of*** workers in an occupational environment adapted to his physiological and psychological capabilities and
5. To ***summarize the adaptation of work***er to man and of each man to his job.

✓ **Hazards**

These may be introduced into fresh fruit and vegetable products at numerous points in the production chain as a result ***of bad agricultural practices***.

Hazards associated with production flow that could be harmful to the consumer

There are three main types of hazards associated with fresh produce:

- Biological
- Chemical
- Physical

Biological hazards

- ***Food-borne micro-organisms***, such as bacteria, viruses and parasites, are often referred to as biological hazards. Some ***fungi*** are able to produce toxins and also are included in this group of hazards.
- ***Micro-organisms*** able to cause human ***disease*** may be found on raw produce. Sometimes they are part of the ***fruit*** or ***vegetable micro flora*** as incidental contaminants from the soil, dust

and surroundings. In other instances they get introduced onto the produce through ***poor production*** and ***handling practices***, such as the use of untreated manure, the use of contaminated irrigation water or unsanitary handling practices.

Microbiological risks reason for occurrence

- Slurry spread
- Pathogens present (or numbers too high)
- Contamination from livestock and human sewage
- Water, Salmonella, Poor quality control at harvest
- Inadequate pre-harvest container and equipment cleaning
- Harmful and domestic animals
- Inadequate temperature control during storage
- Decaying matter, Poor stock management
- Parasitism,
- Poor waste management

Chemical hazards

- Chemical contaminants in raw fruits and vegetables may be naturally occurring or may be added during ***agricultural production***, ***post-harvest handling*** and other unit operations. Harmful chemicals at ***high levels*** have been associated with ***acute toxic*** responses and with chronic illnesses. Examples of chemical hazards:
  - Pesticides
  - Fertilizers
  - Antibiotics
  - Heavy metals
  - Oils and grease

Chemical hazards Risks Reason for occurrence

- ⊗ Residues of non-approved pesticides
- ⊗ Wrong pesticide selection
- ⊗ Incorrect dosage/concentration
- ⊗ Harvest interval not observed
- ⊗ Poor calibration of sprayer
- ⊗ Sprayer drift
- ⊗ Inadequate cleaning between uses
- ⊗ Contamination of produce due to pesticide storage conditions
- ⊗ Spillage of pesticides on produce

- ⊗ Use of contaminated water to mix spray
- ⊗ Oils, grease and fuel contamination
- ⊗ Inappropriate use of produce containers to store pesticides, fertilizers or oil

Physical hazards: foreign bodies

- Examples of ***physical hazards*** include:
  - Residual soil and stones found on fruits and vegetable;
  - Packaging remaining from harvesting (wood, metal, etc.);
  - Packing materials and storage facilities, e.g. packaging plastics and cardboard;
  - Foreign matter collected during harvesting;
  - Glass and sharp objects;
  - Personal effects: jewels, hair, pens

Physical hazards Risk Reason for occurrence

- Soil Presence in finished products
- Machinery
- Dirty packaging materials
- Inadequate inspection of field equipment and packing facilities
- Inadequate maintenance of containers and machinery
- Discarded rubbish, e.g. bottles, cigarette butts
- Inadequate cleaning schedule
- End product contains: jewelers and pieces of clothing
- Staff untrained in personal hygiene
- Inappropriate working clothes

Self-Check -5	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What is OHS? (5)
2. List the main types of OHS hazard in area conservation work (5pt)

Note: **Satisfactory rating - 8 points and above** **Unsatisfactory - below 8 points**

You can ask your teacher for the copy of the correct answers.

Score = _____

Rating: _____

Answer sheet

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Operation Sheet-1	Techniques of identifying material, tools and equipment's for natural area conservation

Objectives:

- To identify different types of natural area conservation tools and equipment.
- To understand way of handle materials, tool and equipment used for area conservation.
- To know how to use PPE properly and keep safety

Procedures:

1. Wear personal protective equipment
2. Go to store and open
3. Identify material, tools and equipment that are appropriate to tasks
4. Then, separate functional and unfuctional material, tools and equipment that are appropriate to tasks
5. Load to work site by arranging it according to their types
6. Then, unload it when reach the site carefully
7. Use it according to their functional or purpose of it designed
8. After complete the tasks clean, maintain and repair it.
9. Then, return to storage and store it properly. if any broken or problem report to supervisors.

Operation Sheet-2	Techniques of checking faulty or insufficient materials, tools and equipment

Objective: To check all materials, tools and equipments used in area conservation works and separate faulty.

steps:

1. use a list of materials provided by your supervisor and then classify the materials according to their purpose as materials used during land preparation, cultivation or harvesting, etc.

2. know the name of the materials listed in your supervisors list

3. Go to horticultural crop store or plant science department material store and identify all the materials physically one by one

4. Describe the use or purpose of each material

5. Check wear and tears of each material

6. Separate a materials which doesn't have best match with handle, broken, have hole on containers, not sharp/can be easily broken, or can't function relative to the purpose of the work, or any other unspecified reasons.

7. Count the number of faulty, functional or material that can be maintained very easily.

8. Finally report to your supervisor the categories of material based on their purpose, the total number of each category, the number of faulty materials and also; and also if the functional materials are sufficient in number for the intended horticultural crop

Operation Sheet-3	Techniques of Loading and unloading materials

To minimize damaging of materials during load and unload.

To keep the worker and the vehicle safety

Procedures:

1. Before loading and unloading your materials you will be provided materials in the store, vehicle on which to load materials
2. Wear suitable personal protective equipments.
3. First go to the store and check horticultural crop work materials.
4. Then group yourself in pair of two person or more persons
5. Open the back or the side of the carriage for easy loading if necessary, for loading the materials you should take care of the vehicles glasses or the vehicle could be carriage and a tractor.
6. Let one person or one group be on the vehicle and the other group on ground
7. Let the group on ground take materials from store and give it for his counterpart on the vehicle
8. Let the group or person on the vehicle receive the material from the person on the ground and place it on the vehicle.
9. Place orderly and safely, not throwing the materials on the vehicle.
10. Finally close the back side of the carriage and move to the site of horticultural crop work or unload the materials
11. Use the same procedure above for unloading
12. One group or person on the vehicle take materials orderly and from the top, and give it to the person on the ground
13. Then the person on ground will take the materials to the store and place them orderly and safely without throwing them on the ground

LAP Test	Demonstrate identifying of area conservation tools and equipment

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: You are required to perform any of the following tasks:

Task 1- perform identification of material, hand tool and equipments.

Task 2-perfom techniques of checking faulty or insufficient materials, tools and equipment

Task 3- Techniques of Loading and unloading materials

List of Reference Materials

1. Habtamu k.2012.*Support agricultural crop work level I.*

2. SAQA (South African qualifications Authority), 2006.Learner guide of agriculture. South Africa.

3. htt://www.garden.gear.co.uk/watering/mix.match-sprinkler system.

HORTICULTURAL CROPS PRODUCTION

Level I

Learning Guide#42

Unit of Competence: Support natural area conservation Works

Module Title: Supporting natural area conservation Works

LG Code: AGR HCP1 M11 1219LO2-LG-42

TTLM Code: AGR HCP1 TTLM 1219v1

LO 2: Undertake conservation work as directed

Instruction Sheet	Learning Guide #42

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Preparing materials, tools and equipment for conservation work
- Undertaking conservation work as directed
- Storing and stockpile materials
- Cleaning up on completion of conservation work

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

LO2. Undertake conservation work as directed

- Follow instructions and directions
- Undertake Conservation work as environmentally safe manner
- Carry out Positive interaction with clients and other staff
- Observe work place policy and procedures
- Report problems or difficulties

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1-5” on page 31-46..
3. Accomplish the “Self-check” in page 33, 39,42,45 and 47.
4. If you earned a satisfactory evaluation precede to “Operation Sheet” in page 48. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity ----------.
5. Read the “Operation Sheet” and try to understand the procedures discussed.
6. Do the “LAP test” in page 49 (if you are ready) and show your output to your teacher. Your teacher will evaluate your output either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work. But if satisfactory you can proceed to Learning Guide ----------.

Information Sheet-1	Following instructions and directions

Work instruction and guidelines that clearly describe activities to be conducted sequentially in the conservation area have to be prepared to simplify the conservation works, such as landscape, forests (natural and or plantation), water, soil and other resources, and to ensure the successful accomplishment of the work.

Making most of the extensive, trial and error experience gained by conservation organizations while designing, implementing and appraising their conservation projects, the members of the conservation measures partnership have developed a set of project cycle or adaptive management open standards that are reflected in the work of all organizations and are, fundamental to effective conservation.

We have organized the main ingredients of these open standards principles, tasks, and guidance into seven steps that comprise the project management cycle. Including conceptualization, planning, implementation, analysis, adaptation, communication, and iteration.

A project is the implementation and management of one or more activities in an area of similar environmental and social characteristics.

1.1 The *Open Standards*

Conceptualize Project

- Define Initial project team regarding conservation work
- Define scope(in terms of time required and area to be covered), Vision & Targets
- Identify Critical threats (expected when we conduct conservation work)
- Complete Situation Analysis

Plan actions and monitoring

- ✓ Develop strategic plan
- ✓ Develop monitoring plan
- ✓ Develop operational plan

Implement actions and monitoring

- Develop short term work plan
- Develop and refine project budget
- Implement plans

Analyze, use and adapt

- Prepare data for analysis

- Analyze results
- Adapt project plan

Capture and share learning

- Document learning
- Share learning
- Create a learning environment

Self-Check -1	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What kind of instruction and direction provide for area conservation work participants?(10pts).

2. Discuss the importance of developing instruction and direction for conservation work activities (5pts).

Note: **Satisfactory rating - 15 points and above** **Unsatisfactory - below 15 points**

You can ask your teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

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2._____

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Information Sheet-2	Undertaking Conservation work as environmentally safe manner

Good agricultural practice related to soil fertility improvement include maintaining and improving organic matter, appropriate crop rotation, manure application, rational mechanical and conservation tillage, maintaining soil cover, minimizing soil erosion losses by wind and water, and application of organic and inorganic fertilizers in amount and timing, and by methods appropriate to agronomic, environment and human health requirements.

- **Maintaining soil organic matter through mulching**
  - Higher organic matter in the soil creates porous soil and improves the aerations.
  - Organic matter improves soil moisture.
  - Soil organic matter acts as buffer against adverse environmental effects such as higher temperature and drought.
- **Crop rotation: p**lanting crops with different requirements in rotation, such as leguminous and cereals, also intercropping deep-rooted crops with shallow-rooted ones.
- **Aerate the soil:** by ***double digging, adequate ground cover and mulching*** provides both soil micro-organisms and plant roots with much-needed oxygen to breathe.
- **Provide drainage:** too much water can cause serious damage to the soil and plants; by applying mulching, adding humus to the soil and ridging can help prevent water logging.

2.1 Protect the land from soil erosion and degradation

Practices that can help to protect against soil erosion and minimize the loss of topsoil are strongly encouraged such as:

- Terracing
- Conservation tillage
- Planting bunch grasses
- Planting tree hedges and shelter belts
- Planting perennial crops such as fruit trees with cover crops.

Application of compost, manure and inorganic fertilizer in a correct amounts and timing and by methods that are appropriate to agronomic and environmental requirements

Categories of fertilizers

Depending on the ***source of materials***, fertilizers can be divided into two categories:

- Organic fertilizer

- Inorganic fertilizer

2.2 site selection and clearing

For horticulture crops production site selection is the basic activity. selection of the site based on criteria requirements like source of water, soil condition..and clearing by removing wanted material from the site.

2.3 Land preparation and planting

When establishing a new plant plantation, certain actions need to be implemented to ensure the long term success of the plantation. One of these actions involve the initial land preparation which should be done prior to transplanting of the plant material. The purpose of land preparation is to provide the necessary soil conditions which will enhance the successful establishment of the young plants received from the nursery. Considering the nature of the plant, one cannot "save" on this operation and hope for long term sustainability of the plantation.

2.4 Maintenance of conservation areas

A. Protection

If not properly managed, weeds can create several problems. They can compete with trees, especially young ones, for water, nutrients, and even sunlight.

Weeds can also enhance the activities of other pests such as insects, mites, nematodes, and diseases, and create a fire hazard when they dry up in the summer.

Weed controlling can be performed by;

Mulching, applying Cover crop (Be sure to select a cover crop such as fall-seeded cereal crops (wheat, oat, cereal rye, or barley), that will not compete with the trees)

- **Herbicides**

Before using any herbicide, identify the weed species to be controlled, then read and follow product label directions carefully.

- **Pre-emergence Herbicides**

Pre-emergence herbicides are applied to bare soil and are leached into the soil with rain or irrigation where they are active against germinating weed seeds.

- **Post-emergence Herbicides**

Post-emergence herbicides are applied to control weeds already growing in the orchard. They may be contact herbicides or translocation (systemic) herbicides. Contact herbicides kill only the parts of the plants that are actually sprayed good coverage and wetting are therefore essential.

B. Cultivation

This is best accomplished when weeds are still in the seedling stage; it becomes more difficult when weeds are allowed to get large.

C. Pruning

Pruning is the removal or reduction of certain plant parts that are not required, that are no longer effective, or that are of no use to the plant. It is done to supply additional energy for the development of flowers, fruits, and limbs that remain on the plant. Essentially, it involves removing plant parts to improve the health, landscape effect, or value of the plant. By cutting back lateral branches, the tree or shrub is trained to develop a desired shape, to fill in an open area caused by storm or wind damage or to keep it in bounds to fit a given area. Pruning can be done at any time of the year; however, recommended times vary with different plants.

D. Staking

Staking refers to arrange nursery seedlings in an order pile/straight up to avoid growth of root deformity.

E. Fertilizing

Fertilizer is not plant food. Plants use water, carbon dioxide, elements from fertilizer, and energy from the sun to produce their own food. Synthetic (manufactured) and natural (sometimes incorrectly called organic) fertilizers provide nutrients for plant growth.

Addition of the correct amount of fertilizer can promote healthy flower production and foliage growth while an excessive fertilizer application can decrease plant health and can lead to decline and death.

Fertilizer applications are used during the growing season to improve the health and appearance trees. Most deciduous trees should be fertilized once every two to three years. Evergreens may be fertilized in the spring, but less often than deciduous trees.

Methods of application

- Top dressing
- Fertigation
- Starter solution

F. Watering

Regular watering is essential for summer bedding, vegetables, pots and hanging baskets as well as newly planted trees, shrubs and herbaceous plants.

- Always water your plants in the cool of the evening or very early in the morning
- Apply water to the base of plants where it can soak down to the roots
- Micro-drip irrigation systems can be installed to deliver water directly to where the plants can use it.

The aim is to enable the plant grower to plan and structure the implementation process in advance, ensuring the successful establishment of the plant plantation. Planning forms part of the initial preparation and will help to limiting unnecessary stop during the implementation phase.

Critical factors to consider during this planning exercise are as follows:

- ⌘ Availability and quality of irrigation water
- ⌘ Field selection
- ⌘ Mechanical actions to be implemented
- ⌘ Chemical needs for pre-plant soil improvement
- ⌘ Tools and equipment needed for cultivation
- ⌘ Labour needs
- ⌘ Irrigation design and installation
- ⌘ Leaching schedule
- ⌘ Hole preparation
- ⌘ Financial requirements and Time schedule.

2.5 Availability of water

Critical factors regarding water for irrigation purposes are:

- ✪ The sustainability of the water source,
- ✪ The quantity of water available for irrigation,
- ✪ The distance to the field, and
- ✪ The quality of the water.

2.6 Soil depth

Besides the importance of root development, soil depth also influences drainage and leaching possibilities. Any obstructive layers must be evaluated to determine whether they will influence root development and whether they can be corrected.

2.7 Soil quality

When evaluating the soil quality, attention must be given to:

- ✪ The soil texture which will influence the water retention capacity, and
- ✪ The nutrient content to determine the corrective measures necessary for soil improvement.

2.8 Soil salinity or acidity

Plant growth is influenced by either saline or acid soil conditions which, in the end, will result in a loss of potential yield. Saline and alkaline soils are usually the result of:

- ✪ An increase of the underground level caused by excessive drought situations (high evaporation);

- The use of high salt content water, and
- Very poor drainage system.

The negative influence of saline conditions are:

- High concentration of soluble salts;
- High soil pH;
- Poor drainage and aeration; and
- The negative effect of sodium on the plant metabolism.

Self-Check- 2	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid

1. List the factors that related to soil fertility improvement for good agricultural practice (5 points)
2. Mention the factor that influence plant growth.(5points)
3. Critical factors to consider during planning undertaking conservation work?(5 points)

Note: **Satisfactory rating - 15 points and above** **Unsatisfactory - below 15 points**

You can ask your teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

1._____

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Information Sheet-3	Carrying out positive interaction with clients and other staff

3.1. Effective communication

The purpose of this topic is to determine the minimal components of a self-management program necessary to increase positive interactions among staff and clients at work place. Three interventions were implemented, as needed, in an additive fashion including: instruction and goal setting, self-management, and feedback. Instruction and goal setting did not increase staff positive interactions to a criterion level of 30% of intervals. However, during the self-management phase, all staff increased their positive interactions with clients, but two staff required feedback to maintain their positive interactions at the criterion level. Measures of generalization, compliance, and acceptability showed that increases in positive interactions occurred outside the assessment sessions, staffs were consistently employing the procedures and staff found all procedures to be acceptable.

Effective communication in the work place plays important role in reducing damages and hazards through exchanging and sharing information regarding the work using one of the following ways:

- Variable written and graphical instructions, work bulletins and OHS manuals.
- Industry or workplace codes of practice.
- Organization operating procedures.
- Operation manuals, workplace guidelines / work shop manuals

The other communication is with farmers. Any conservation project plan need to be participatory, centralizing the opinions of farmers which will help in ensuring the sustainability of the work. Natural resource conservation work is not a one time project and it needs the participation of the society.

Clear communication with different stakeholders such as local people impacted by the project or their representatives, local policy makers and representatives of local authorities, designated national authority local NGOs working on topics relevant to the project and other is necessary for successful accomplishment and sustainability of conservation work. The interaction between the farmers, customers and staff members should be carried out in a positive manner.

Develop, review and revise personal skills in communication as an ongoing priority to address organisation standards. The word communicate is often used in conversation, for example, ‘She or he is a great communicator’ or ‘We just can’t communicate’. When you hear this, do you wonder what people mean? After all, it’s impossible not to communicate and we communicate all the time. Usually, when we talk about someone being a ‘good communicator’, we mean they have good communication skills and use them effectively. When people say they are ‘not communicating’, they usually mean they are not communicating effectively (not getting the right message across) or are not feeling comfortable about their interaction with someone.

Self-Check- 3	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What kind of interaction you need to have in the workplace?(5pts).
2. What is the purpose of interaction with other staff and clients? (5points)
3. Why, positive interactions among staff and clients important at work place? (4points).
4. Mention the three the type interventions (3points).

Note: **Satisfactory rating - 15 points and above** **Unsatisfactory - below 15 points**

You can ask your teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

1._____

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Information Sheet-4	Observing work place policy and procedures

4.1 **Workplace policy**

A **policy** is “a documented statement of overall intentions and direction defined by those in the organization and endorsed by management. Policies are a statement of purpose, which highlight broad guidelines on action to be taken to achieve that purpose. The statement of purpose should not be more than one page in length, but this will vary depending on the policy.

Policies give broad and general direction to the quality system. They:

- Tell “what to do” in a broad and general way
- Include a statement of the organizational mission, goals, and purpose;
- Serve as the framework for the quality system, and should always be specified in the quality manual.

4.2 Principles of environmental sustainability

- Facilitate and enhance the decision making process by seeking opinions, feedback and participation from the stakeholders on environmental management issues and sites.
- Promote and encourage environmental awareness and responsibility among all members of the community.
- Strive for continuous improvement of environmental performance by identifying and addressing environmental risk.
- Decision making processes to effectively integrate both long term and short-term economic, environmental, social and equity considerations.
- Offer, encourage and develop subject, courses and research of environmental and sustainable content. Promote external awareness by supporting projects that seek solutions to environmental problems in order to improve the sustainability of the global environment.

4.3 Procedures

Procedures are the specific activities of a process that tells “how to do it”, and shows the step by step instructions. Procedures explain how to perform tasks and duties as well as ways you meet objectives

- Minimise or eliminate our negative environmental impacts and use of resources; work closely with our staff, unions, students, suppliers and other interested parties to continually improve our work practices and operations by setting environmental objectives and targets in accordance with best practice standards
- Incorporate best practice environmental management into our core business plans and management practices, including the preparation, fit out and ongoing operation of new accommodation;
- Regularly monitor and report on our environmental performance;
- Actively promote and encourage the adoption of ecologically sustainable work practices
- Operations within the general community

Self-Check- 4	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What is work place policy regarding material disposal? (5pts)
2. List the ways of effective communication takes place in workplace (7pts).

Note: Satisfactory rating -12 points and above Unsatisfactory – below 12 points

You can ask your teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

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Information Sheet-5	Reporting problems or difficulties in completing work

Every farm has its own set of procedures and systems to deal with the organizing, issuing and controlling tool stock. It is important that you find out who is responsible for different aspect regarding tools and equipment on the farm where you work. Also you should know who you have to report problems or defects to. Do not attempt to fix, maintain or use a tool if you have not been trained to do so. It is essential that problems and malfunctions be immediately reported to the correct person to prevent risk of injury through the use of the tools. It is important to respect the roles of the people placed in charge of organizing and maintaining tools because this also protects your safety. Supervisors need to be trained to check that laborers' use tools in a proper way. Even when using a tool correctly a certain way of handling the tool will cause premature wear or damage to it.

5.1 Factors affecting conservation work

Most conservation projects concluded without difficulties and the people near by the area will be satisfied with the implemented project. Unfortunately, we may face unforeseen occurrences or difficulties. Some of the common factors why some conservation actions succeed while others do not may be:

- ✓ Local climate
- ✓ Labour availability
- ✓ Equipment utilization
- ✓ Local cultural characteristics
- ✓ Conservation site availability
- ✓ Extent of conservation work
- ✓ Material shortage
- ✓ Non-working holidays

Problems or difficulties in completing work to required standards or timelines should be reported to supervisor on time so that measures will be taken either to fix the problem if it can be such as sharpening tools and equipments or report to higher position if problems cannot be fixed on the time.

Complete your work: we try to complete a conservation work by estimated materials and labor costs. In order to successfully bid your job you need to know all aspects of what it is going to cost in order to complete the job.

Self-Check- 5	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What are the factors that may affect conservation work?(10)

Note: Satisfactory rating 10 points and above Unsatisfactory – below 10 points

You can ask your teacher for the copy of the correct answers.

Note: **Satisfactory rating - 15 points and above** **Unsatisfactory - below 15 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

1._____

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Operation Sheet-3	Techniques of undertake planting of Mango

Objective: **To understand how to *planting horticulture fruit (mango)crops properly.***

Materials required for activities:

- Shovel
- Pickaxe
- Meter
- Fork
- Wheel barrow
- Dibble
- Watering can
- Spoon
- Root pruner
- PPE

Procedure

1. Adjust and organize material properly
2. Wear PPE
3. Select site and clean
4. prepare hole
   - Dig hole size is 60 *60cm Diameter
   - Removing soil properly with their layer
5. Insert roots into the soil up to the root collar.
6. Avoid damaging roots by breaking, bending, or crushing.
7. Firm soil around the roots by heeling or foot pressure.
8. Remove impervious containers before planting.
9. On dry sites the planting position should maximize water retention, eg. Furrow bottom, base of mound.
10. Stumps should not be forced into the ground. They should be placed in specially prepared holes and the soil firmed around them as with ordinary plants.
11. In arid regions plants may be put in specially deep to ensure that roots reach moist soil and only a small part of the shoot is above ground and subject to transpiration stress. Deep planting of tall plants can sometimes be done to prevent them being blown over.

LAP Test	**Demonstrate on Techniques of undertake planting seedling**

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: You are required to perform any of the following tasks

Task 1. Perform the Techniques of undertake planting of seedling

List of Reference Materials

1. Mike Nichols and Martin Hilmi, 2009.Growing vegetables for home and market books, Rome.

2. SAQA (South African qualifications Authority), 2006.Learner guide of agriculture.

HORTICULTURAL CROPS PRODUCTION

Level I

Learning Guide#43

Unit of Competence: Support natural area conservation Works

Module Title: Supporting natural area conservation Works

LG Code: AGR HCP1 M11 1219 LO3-LG-43

TTLM Code: AGR HCP1 TTLM 1219v1

LO 3: Store and stockpile materials

Instruction Sheet	Learning Guide #43

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Preparing materials, tools and equipment for conservation work
- Undertaking conservation work as directed
- Storing and stockpile materials
- Cleaning up on completion of conservation work

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

LO3.Store and stockpile materials

- Store plant debris and waste materials
- Prepare and process plant debris and waste materials safely
- Stockpile surplus materials
- Maintain a clean and safe work site

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1-4”.
3. Accomplish the “Self-check” in page 55, 58,60 and 63.
4. If you earned a satisfactory evaluation precede to “Operation Sheet” in page 64. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity ----------.
5. Do the “LAP test” in page 65 (if you are ready) and show your output to your teacher. Your teacher will evaluate your output either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work. But if satisfactory you can proceed to Learning Guide ----------.

Information Sheet-1	Storing plant debris and waste materials

1.1 Waste material storage

Safe and efficient materials storage depends on good co-operation and co-ordination between everyone involved including, client, producers, supervisors, and the experts. Waste material like plant debris, litters, broken components, plastics, metal, paper-based materials etc should be recycled or re-used, or disposed to appropriate site according to supervisor's instruction. Non-noxious weeds, crop wastes, liters are used for preparation of organic fertilizer preparation, crop residue can also serve as animal feed while other waste like broken pieces of metals should be stored in appropriate place and given to metal manufacturer company and plastics, paper can be buried. During storing waste material, it important to classify according to their category like wet solid waste, dry solid waste, liquid waste to make storing simple and store them according to supervisor's instruction

On all project, the arrangements for materials storage should be discussed and agreed between producers, managers, supervisors and the project client. Larger notify able projects should have arrangements for materials storage included in the types of waste materials produced.

1.2 Types of waste

Waste could be categories in to two liquid and solid wastes. Both of them could be hazardous. Liquid and solid waste types can also be grouped into organic, re-usable, recyclable waste, and hazardous.

a) Liquid type: waste can come in non-solid form. Some solid waste can also be converted to a liquid waste form for disposal. It includes point source and non-point source discharges such as storm water and wastewater. Examples of liquid waste include wash water from homes, liquids used for cleaning in industries and waste detergents.

b) Solid type: solid waste predominantly, is any garbage, refuse or rubbish that we make in our homes and other places. These include old car tires, old newspapers, broken furniture and even food waste. They may include any waste that is non-liquid.

c) Hazardous type: hazardous or harmful waste are those that potentially threaten public health or the environment. Such *waste could be* ***inflammable*** (can easily catch fire), ***reactive*** (can easily explode), ***corrosive*** (can easily eat through metal) or ***toxic*** (poisonous to human and animals*)*. In many countries, it is required by law to involve the appropriate authority to supervise the disposal of such hazardous waste. Examples include fire

extinguishers, old propane tanks, pesticides, mercury containing equipment (e.g, thermostats) and lamps (e.g. fluorescent bulbs) and batteries.

figure:1.1

Organic waste comes from plants or animals sources. Commonly, they include food waste, fruit and vegetable peels, flower trimmings and even dog poop can be classified as organic waste. They are biodegradable (this means they are easily broken down by other organisms over time and turned into manure). Many people turn their organic waste into compost and use them in their gardens.

d) Recyclable type: recycling is processing used materials (waste) into new, useful products. This is done to reduce the use of raw materials that would have been used. Waste that can be potentially recycled is termed "Recyclable waste". Aluminum products (like soda, milk and tomato cans), Plastics (grocery shopping bags, plastic bottles), Glass products (like wine and beer bottles, broken glass), Paper products (used envelopes, newspapers and magazines, cardboard boxes) can be recycled and fall into this category.

1.3 Waste management

There is other legislation governing the proper disposal of waste, ranging from low risk waste through to hazardous waste. Top tips for waste management on smaller projects:

- **Flammable materials:**- make sure that all flammable waste materials (such as packaging and timber off cuts) are cleared away regularly to reduce fire risks;
- **Work areas** - make clearing waste a priority for all trades. Check that everyone is aware of what is required that it is being done;
- **Skips** - waste materials need storing safely before their removal from the site so make sure that you allow sufficient space for waste skips and bins etc. Plan where the skips can be positioned and how often they will need to be collected;
- **Waste within buildings** - consider waste generated inside the work site and whether you need to provide wheeled bins or chutes etc. to enable it to be brought out of the work site safely.

Self-Check- 1	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Mention top tips for waste management on smaller projects (10points)
2. List factors that determine safe and efficient materials storage? (5points)
3. Describe types of waste (5pts).

Note: **Satisfactory rating -15 points and above** **Unsatisfactory – below 15 points**

You can ask your teacher for the copy of the correct answer.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

1._____

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2._____

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Information Sheet-2	Preparing and processing plant debris and waste materials safely

Safe and efficient materials storage depends on good co-operation and co-ordination between everyone involved including, client, contractors, suppliers, worker and stake holder for activities should prepare waste materials properly and safely. On all activity area, the arrangements for waste materials storage should be discussed and agreed between supervisors, manager and the worker. Larger notify able preparing waste materials should have arrangements for materials storage included in the different occurrence phase. The simple and easy ways of processing agricultural wastes are making compost, bio fuel, animal feed and mulch.

2. 1. Compost

Composting is the natural process of 'rotting' or decomposition of organic matter by microorganisms under controlled conditions. Raw organic materials such as crop residues, animal wastes, food garbage, some municipal wastes and suitable industrial wastes, enhance their suitability for application to the soil as a fertilizing resource, after having undergone composting.

2.2. Bio fuel

Concerns about the security and sustainability of fossil fuel use, coupled with advances in biomass conversion technology, have renewed interest in crop residue as a bio fuel to partially meet our energy needs. In light of the renewed interest in domestic production of bio fuels and other biomass energy, can a portion of the more than 500 million tons of crop residue produced each year be used to meet some of our energy needs? The answer is not straightforward since crop residues perform many positive functions for agricultural soils that reduce erosion and promote sustainable production.

2.3. Animal feed.

Although almost any crop residue can be fed to livestock, the residues of maize, sugar cane, grain sorghum, soybean, wheat and vegetables are usually involved in animal feeding.

2.4. Mulch materials

Similar to other solid waste management facilities, mulch processing facilities have the potential to cause adverse impacts to the environment and human health. Regulating the production and storage of mulch in order to reduce environmental impacts including dust, odor, adverse water quality, and fires.

Mulch processing facilities create a product derived from tree debris, yard trimmings, and other suitable woody material, which is intended for use on soil surfaces to prevent the

growth of weeds and minimize erosion. Each mulch processing facility is regulated under a different ‘tier’ based on the total quantity of material on site at any given time. This includes both incoming material as well as processed material. Once the finished product leaves the facility, this material is not considered a waste . In addition to the types and quantities of materials accepted, facilities will be held to one or more of the following:

- Pile size and separation distance restrictions;
- Contaminant preclusion and removal;
- The marketing and movement of their product;
- Storage restrictions and time frames; temperature monitoring and pile restacking etc.

Self-Check -2	Written Test

***Directions*:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Discuss ways of processing agricultural wastes(6pts).
2. What is the uses of processing agricultural wastes?(5pts)
3. How to prepare waste materials safely?(3pts).

Note: **Satisfactory rating - 10 points** **Unsatisfactory - below 10 points**

You can ask your teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

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Information Sheet-3	Stockpiling surplus materials

3.1 Stockpiling surplus materials

Proposing to stockpile surplus material adjacent to the future/removal is very essential activity. The placement of the surplus fill material will be ongoing for approximately four months subject to weather. The material will be re-used on future works. The material will be stabilized with vegetation to prevent erosion and dust and will be monitored regularly.

During area conservation works there is create much kind of wastes, among those wastes crop residues and waste pesticides and chemicals take the leading part. Crop residues have good advantage if we properly manage and pile by collect in large amount, where as waste pesticides and chemicals have hazardous effect on environment and animals. Therefore, collecting then identifying hazards and non hazard and disposing hazard as well as poisons at designed area should be preferable for keeping work site safety.

Crop residue: is defined as the vegetative crop material left on a field after a crop is harvested, pruned or processed. As much as possible farmers are encouraged to work crop residues back into the soil or compost them for use as a soil amendment. Recycling crop residues helps prevent erosion and preserve or improve soil quality.

Advantage of crop residue

a) Maintenance of soil organic matter
b) Control water erosion and runoff
c) Control Wind erosion
d) Soil water

Hazardous/ waste pesticides is waste which has hazardous properties and is subject to additional controls to protect the environment and human health. Examples of special waste include: waste pesticides and chemicals which have hazardous properties; waste oils from farm machinery.

Self-Check- 3	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. List kinds of wastes (3pts)
2.Discuss the importance of controlling waste pesticides(6pts)
3. Write the advantage of crop residue (5pts)

Note: **Satisfactory rating -13 points and above** **Unsatisfactory – below 13 points**

You can ask your teacher for the copy of the correct answer.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

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Information Sheet-4	Maintaining a clean and safe work site

4.1 Cleaning of work place areas

A clean and organized work area is essential to any agricultural activities area. Knowing where to find tools, supplies and materials will save time and useful in maintaining the proper inventory of tools and materials. A work place area that is cluttered and disorganized will not only be unsafe, but will hinder the proper maintenance of tools and equipment. A disciplined approach to daily cleaning and organizing will save time and effort in the long run and help ensure that accidents are prevented. Each worker should have a clear vision of what is meant by a clean and orderly work area. Also they should help produce and maintain a clean and orderly work area.

Some positive indicators of a properly cleaned work place area are as follows:

- Benches are cleared and clean
- Machines are clean
- Paint brushes and spray equipment are properly cleaned and stored.
- Solvents, paints and greases are properly stored.
- Tools are in their place.
- Lumber, metal and other construction materials are stored.
- Projects and other related materials are in approved places.
- Floor is clear and trash is in a containers.
- Cabinets and storage areas are locked.
- Every job is checked for completeness.

4.2 Equipment and containers useful for cleanup

There are many items of equipment that are necessary to clean work place area quickly and efficiently and to store materials safely. These items include the following:

- floor brooms
- bench brushes
- floor dust mops- Shop vacuum cleaner(s)
- Scoop shovels and dust pans to pick up dust and trash.

The soft bristled brush and shop vacuum cleaner are the standard tools for removing dirt, saw dust, and trash from benches and machines. The floor broom and dust mop are important floor cleaning equipment. The dust pan and standard scoop shovel are commonly used to move the trash from the floor to the trash can.

4.3 Dust collection systems

Many shops are equipped with dust collection systems. These systems consist of a large centrally located vacuum with ducts running to various machines and areas in the workplace. As a machine creates dust (such as saw dust or sanding dust) the dust is pulled from around the machine and transported to a collection bin. Also, vents may be located in the floor. These systems have to be properly maintained by cleaning the dusts, making sure they are not clogged, and emptying the storage bin periodically.

A few tips on how to maintain a clean and safe working environment

Like Health and safety, maintaining a clean work environment is the responsibility of everyone. As a professional cleaning company we are paid to clean up the workplace. At the end of each day and we take pride in this task. Working together we can all contribute to creating a safe and healthy workplace and a professional looking facility for employees, visitors and customer.

4.4 Repairing

Materials to be repaired may contain residue of different chemicals if it is a container/sprayer there for careful cleaning and making it free is the first criteria before maintain. Or else if the material to be repaired could have any contaminants, may be used in compost or manure turning it is also desirable to clean the material first. During repairing of materials if hammering is required you should take care of your hands and legs, and also take care of the fire you used to heat the material to be hammered. Learn some techniques of repairing materials by your own without harming yourself the material being repaired as desired and also no harm to the surrounding.

4.5 Maintaining

Maintaining is a little less than repairing, and it involves cleaning, fastening, making together of the different parts properly, etc of the materials. While doing the maintenance job we should take care of ourselves from cleaning wastes not to be poisoned when maintaining the nozzles of a sprayer, and not to hit yourself while making the different parts together for example when mounting a planter to a tractor, etc

Self-Check- 4	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. List positive indicators of a properly cleaned work place area(6pts)
2. What is the importance of maintain and clean work site?(5pts)
3. Discuss the tips used to maintain a clean and safe working environment(5pts)

Note: **Satisfactory rating -13 points and above** **Unsatisfactory – below 13 points**

You can ask your teacher for the copy of the correct answer.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

1._____

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2._____

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3._____

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Operation Sheet-4	Techniques of Cleaning of work place areas

objective: To make suitable area for horticulture crop as well as save health and safety of work site.

Procedures in keeping a clean work site

1. Adjust all materials used for activities
2. Prepare suitable PPE and wear
3. Clean and sweep paths
4. check planted areas to ensure they are well presented
5. Replace/ re sown damaged turf
6. Repair disturbed areas
7. Remove all materials, debris, tools and equipment from site,
8. Pruned or replaced damaged plants
9. correct other signs of disturbance or damage.
10. Support construction of landscape features including paths, paving, retaining walls, site structures and furniture, planted areas and irrigation systems.
11. Support maintenance of landscape features including watering, weeding, staking, repairing, painting, and cleaning.

LAP Test	Practical demonstrate of Cleaning work place areas

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: You are required to perform any of the following tasks:

Task 1- perform Techniques of Cleaning of work place areas.

List of Reference Materials

1. *http://www.mass.gov*/eea/agencies/massdep/recycle/regulations/waste-and-recycling-policies-andguidance.html#3

2.Ronald H. Schmidt and Daniel J. Erickson, 2017. Sanitary Design and Construction of Food Processing and Handling Facilities, Florida.

3.Patti Strohmayer, 1999. Soil Stockpiling for Reclamation and Restoration activities after Mining and Construction, journal vol. 4, no. 7, USA.

4.Adams John, 1999. managing water supply and sanitation in emergencies.

HORTICULTURAL CROPS PRODUCTION

Level I

Learning Guide#44

Unit of Competence: Support natural area conservation Works

Module Title: Supporting natural area conservation Works

LG Code: AGR HCP1 M11 1219LO4-LG-44

TTLM Code: AGR HCP1 TTLM 1219v1

Lo4:Clean up on completion of conservation work

Instruction Sheet	Learning Guide #44

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Preparing materials, tools and equipment for conservation work
- Undertaking conservation work as directed
- Storing and stockpile materials
- Cleaning up on completion of conservation work

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

Lo4.Clean up on completion of conservation work

- Store plants and Materials
- Clean, maintain and store tools and equipment
- Report work outcomes

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1-3”.
3. Accomplish the “Self-check” in page 71, 75 and 77.
4. If you earned a satisfactory evaluation precede to “Operation Sheet” in page & However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity ----------.
5. Do the “LAP test” in page (if you are ready) and show your output to your teacher. Your teacher will evaluate your output either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work. But if satisfactory you can proceed to Learning Guide ----------.

Information Sheet-1	Storing plants and materials

1.1 Storing plants and materials in a designated area

To prevent or reduce the discharge of pollutants to storm water from material delivery and storage, pollution prevention and source control measures, such as minimizing the storage of hazardous materials on-site, enclosing or covering materials, storing materials in a designated area, installing secondary containment, conducting regular inspections, preventing storm water run-on and runoff, and training employees and subcontractors must be implemented.

1.2 Pollution Prevention

- Store all materials inside. If this is not feasible, covered with a roof and enclosed to prevent storm water contact.
- Keep liquids in a designated area on a paved impervious surface within a secondary containment.
- Design paved areas to be sloped in a manner that minimizes the pooling of water

Identifying raw materials that can be contaminate, regular controlling of the storage area, training of employees, construction of storage shade, and space limitation for storage areas are the key pollution prevention methods.

Choose, handle and store agricultural inputs with great precaution as per label instructions.

- Storage facilities must be constructed of suitable materials, well ventilated, well lit and located where
- Risks to the environment or human health are minimized in case of fire, spillage, flooding or other emergencies.
- Separate storage from living quarters, food, feed, fertilizer, fuel and waste.
- Areas where pesticides are handled and stored are designed such that spillages can be contained and do not reach the environment or pose a risk to human health.
- Pesticide contaminated equipment (e.g. sprayers, PPE, measuring equipment) is stored and handled as
- specified by the manufacturer, separately from food, feed, living quarters and food preparation and consumption areas).
- Application equipment is maintained and calibrated on a regular basis.
- All fertilizer should be recorded and records should include: crop name, location of application, date of application, product trade name, operator name, and product quantity.

A good care should be taken of the materials, tools, equipments and machinery which would then have a long life (prolong the time of service), minimize the cost of buying new materials in replacement to faulty once. It is not wise to keep workers sitting idle at critical periods of the work because of shortage of materials.

Rules in handling materials, tools equipments and machineries are:-

- Check that tools, equipments and machines are functional before start of the work
- Check that machines/tractors are serviced
- Used all tools, equipments and machines for what they are designed or constructed.
- Clean the tools equipments and machines always before storing them away.
- Store them in a neat, dry place.
- Repair and maintain simple tools, equipments

The tools, equipments, and materials should be returned to store on completion of the work after they have been cleaned, checked the number. Any dirt (soil, and other) adhering with the tools and equipments should removed before storage. Similar tools should be stored separately without mixing with other tools which help you to identify easily. During performing the work, some tools, equipments and materials can be broken, detached the handle from the main part, so such damaged tools should be maintained if the problem is simple. The broken tools should be identified and store alone until maintained. When materials are broken highly and not be maintained by other experts, they should be disposed of according to supervisor's instruction.

Self-Check- 1	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. How can you prevent pollution? (10 points)
2. Why, storing materials in a designated area is advisable?(5pts)

Note: **Satisfactory rating -15 points and above** **Unsatisfactory – below 15 points**

You can ask your teacher for the copy of the correct answer.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

1._____

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2._____

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3._____

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Information Sheet-2	Cleaning, maintaining and storing tools and equipment

The main activities that used in maintaining and cleaning tools and equipment include:-

a. Clean tools last longer

If nothing else, tools should be cleaned after each use. Doing so keeps diseases, fungi, insect eggs, and weed seeds from being unwittingly spread around the garden. Cleaning also extends the life of a tool by removing moisture laden, rust enhancing soil from steel surfaces. For tools with a keen edge, a good cleaning keeps rust from eating the edge away. After every use, wash soil and grime from tools with a steady spray of water from the garden hose

. **fig 2.1 Clean tools**

b. Apply oil to prevent rust

Even after washing and drying, steel tool heads are still susceptible to rust when exposed to oxygen. In fact, as a general rule, the better the grade of steel used, the more vulnerable it is to rusting. So, considering the high cost of quality gardening tools, it just makes sense to keep rusting to a minimum. Motor oil is inexpensive and effective rust preventer. When applied to steel surfaces, the oil insulates the steel and prevents it from oxidizing.

fig 2.2 Apply oil to prevent rust

Oil steel tool heads to prevent them from oxidizing. The oil creates a barrier between the air and the steel.

c. Remove rust with a wire brush

Extremely rusty tools require special attention. Use a sheet of 80-grit sandpaper to remove light coatings of rust. For a slightly heavier coat, a stiff wire brush can be effective. Sand away a light coating of rust. 80 grit sandpaper should be coarse enough to get the job done.

fig 2.3 Remove rust with a wire brush

fig 2.4 Use a wire brush to remove a layer of rust

fig 2.5 For a very heavy coat of rust, use a drill with a wire brush attachment.

d. **Sharpen tools for peak efficiency**

Sharpening tools is a slightly more complicated procedure than removing rust. Some tools like shovels, axes, hoes, and trowels are best sharpened with a hand file, while other tools like pruning shears and knives call for a honing stone. Depending on how dull an edge is, some tools may require a session with a high-speed grinding stone. Use a hand-held mill file to sharpen hoes and shovels. The key to successful sharpening is keeping the tool steady and the file at the proper angle.

fig 2.6. Sharpen tools for peak efficiency

e. Grind battered tools into shape

Since the grinding process removes metal quickly, only the most battered tools are candidates for regular grinding. Tools like lawn-mower blades and grub axes usually merit an annual trip to my grinder. An electric bench grinder is the best way to retrieve a keen edge because it has an adjustable tool-rest platform that allows for more exacting edges. fig 2.5

***fig 2.7* Grinding sharpens tools quickly**

Storing tools and equipments

Tools are issued to the workers every morning by the storekeeper, and returned in the afternoon after completion of works. The supervisors need to ensure that the workers are issued the correct type of tools according to the work activities they will be carrying out. The storekeeper is responsible for keeping full records of the tools and controlling the issue of tools to the workers

The size of the store depends on the quantity of tools to be stored. When the work site is very isolated, the store has to be well stocked and will therefore be larger. Tools should be stored in a dry and secure place. They should be stacked neatly so that they can easily be counted. Stack different items and items of different sizes separately. Employ a watchman to guard the stores when the storekeeper is off duty.

Self-Check- 2	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid

1. Why maintenance and storage of tools and equipment is very important? (4points)
2. Some equipment/tools require oil or lubricants. Why? (Give some example) (5points)
3. Mention some ways of hand tools handling? (4points)
4. What kind of storage is appropriate for storing equipments/tools? (4points)

Note: **Satisfactory rating -15 points and above** **Unsatisfactory – below 15 points**

You can ask your teacher for the copy of the correct answer.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

1._____

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2._____

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4._____

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Information Sheet-3	Reporting work outcomes

On completion of crop work out comes like **productivity, production, strengths of production, weaknesses of production, and problems of production should be reported** to you supervisor according to instructions and formats given from the supervisor. The work outcomes can vary depending on objective; it can be fruit, seeds, leafy parts, stem parts, flowers, lawns, etc. Reporting work out come helps you to get feedback by your supervisor so that you can leave your weakness and encourage your strength. It also helps the supervisor to get full information about the production.

Reporting is informing all information related to the work to a person who concerns about. It helps to the supervisor and other concerned persons' to know the standard of the work and at what level the work activities are found and also help to supply solution by concerned people if problems are there.

There are a number of **problems occurred during crop work**, of which some of them are as follows:

- Faultiness of the tools and equipments
- Lack of materials for maintaining tools and equipments
- Lack of personal protective closes
- Unsuitability of personal protective closes
- Lack of materials, tools and equipments during the work
- Lack of agricultural inputs,
- Loss of tools and equipments during the work
- Damage to the vehicle etc

The problems occurred during undertaking crop work should be reported to the supervisor so that there will be solution for the coming work cycle. The reporting format may vary but it can be as follows:

S.no	Work outcomes	Productivity (kg/q)	Production (kg/q)	Problems

Self-check- 4	Written Test

Name: _____ Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some answers.

1. Which outcomes can be reported during crop work? (6pts)
2. Discuss the importance of reporting work outcomes (6pts).

Note: Satisfactory rating – 10 points and above Unsatisfactory - below 10 points

You can ask your teacher for the copy of the correct answer.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Starting time:_____ Ending time:_____

Short Answer Questions

1._____

_____

_____

2._____

_____

_____

List of Reference Materials

1.*http//www.fao.org*, 2002. Plant production and protection paper 156 rev.1.

2. *htt//www.manage.gov.in/publications farmers book.pdf.*

3.https;//www.bing.com/search.

*4.*Habtamu k.2012.*Support agricultural crop work level I.*

6. Metric OPSS (Ontario provincial standard specification), 2005. General specification for the management of excess materials.

7. Ronald H. Schmidt and Daniel J. Erickson, 2017. Sanitary Design and Construction of Food Processing and Handling Facilities, Florida.

8. Patti Strohmayer, 1999. Soil Stockpiling for Reclamation and Restoration activities after Mining and Construction, journal vol. 4, no. 7, USA.

NO	TTLM developer Name	Back ground Qualification	College Address	College Name	Cell Phone	E-mail
1	Deribow Gonfa	Plant science(Bsc)	Oromiya	Fitche PollyTVET	0912774688	gonfad24@gmail.com
2	Tesfaye Tekola	Agronomy (Msc)	Benishangul Gumuz	Assosa ATVET	0910550651	tttekola@gmail.com
3	Berhanu Mammo	Horticulture (BSc)	Mizan ATVET	Federal	0912676883	birehanmammo@gmail.com
4	Haftu Mehari	Plant science(BSc)	Tigray	Maichew ATVET	0914312311	Kalabkalab61@gmail.com
5	Melaku Bawoke	Agronomy (Msc)	Federal	Gewane	0920258287	Melakubawoke10@gmail.com
6	Tadesse Yasin	Horticulture (BSc)	Amhara	Kombolcha PollyTVET	0921626541	tadaseyasin2019@gmail.com
7	Zewde Paulos	Agronomy(Msc)	SNNPR	Sodo ATVET	0921004814	Zedpa2013@gmail.com
8	Bekele Belete	Agronomy (Msc)	SNNPR	Sodo ATVET	0916379025	Bekelebelete6@gmail.com
9	Fetene Muluken	Agronomy (Msc)	Amhara	Woreta ATVET	0986911690	Fetenemuluken9@gmail.com
10	Misgana Belay	Agronomy (Msc)	Oromia	Nedjo ATVET	0911983854	Misbel2000@gmail.com
11	Sadik Ebrahim	Agronomy (Msc)	Federal	Agarfa ATVET	0920617776	sadikebra@gmail.com
12	Birhanu reda	Horticulture(BSc)	Tigray	Maichew ATVET	0923452395	birhanureda@gmail.com

Profile of trainers participate on special Horticultural Crop Production TTLM development for level I at Adama 2019