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**GENERAL CERTIFICATE IN ORNAMENTAL
HORTICULTURE LEVEL 1**

Workbook :

**Control Weeds Manually in
Plant Propagation and Landscaping**

**Control Weeds Manually in
Plant Propagation and Landscaping
Learner Workbook**

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**Workbook :
Control Weeds Manually in
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A c k n o w l e d g e m e n t s

Developed by

Lifestyle College

With special thanks to:

Tasha Tollman

Rick Smit from Dynamic Solution Synergies

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Study Session Overview

Purpose

The purpose of this study session is to equip you with the skills and knowledge necessary to control weeds by hand, in containers, plant beds, turf grass and landscape areas.

This study session forms part of the General Certificate in Horticulture, NQF level 1 and is aligned with the Unit Standard: Control weeds manually in plant propagation and landscaping, which carries 4 credits.

Who is it for?

This study session and unit standard form the knowledge base for people working with plants within the ornamental horticulture or landscaping industry and gives the learner the skills and knowledge necessary to:

- Demonstrate an understanding of the objectives of weed control.
- Select the tools and equipment for manual weed removal.
- Select personal protective equipment (PPE) needed to remove weeds by hand.
- Identify common weeds and their regenerative processes.
- Demonstrate the preparation and procedures for the effective removal of weeds.
- Conduct effective disposal of weeds.

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What's in it for you?

The skills acquired in this study session will equip you with the skills and knowledge needed to be able to control weeds by hand. These skills and knowledge form the basis of your horticultural studies and help you to:

- Describe the effect that weeds have on desirable plants.
- Describe the rapid re-establishment of weeds.
- Explain the importance of the correct timing of weed control.
- Explain the suitability of the tools or equipment used for the removal of specific weeds.
- Inspect the cleanliness and working order of the tools and equipment.
- Explain the suitability of the selection of personal protective equipment for the hazards posed by the specific weeds to be removed.
- Inspect and test the selected equipment to ensure that it is in correct working order.
- Classify and give examples of the major weeds.
- Remove weeds around shallow rooted plants.
- Minimize disturbance of the roots of desirable plants.
- Inspect the site to ensure that the weeds have been effectively removed.
- Explain why the area to be weeded must first be watered well.
- Give reasons why the soil should be loosened around the weed's stem before it is removed.
- Identify the weeds that should not be added to the compost heap.
- Demonstrate the procedures for handling and disposing of non-compostable weeds.

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What about assessment?

If you can:

- Remove weeds by hand.
- Dispose of the weeds.
- Answer all the knowledge questions.

You will receive credits for a competent rating on your assessments.

These credits contribute 1 unit standard and 4 credits towards the National Certificate in Ornamental Horticulture Learnership at NQF Level 1.

The laid down policies and procedures with regard to assessment, moderation, RPL and appeals govern this assessment.

You will be rated "Competent" or "Not Yet Competent" against the assessment criteria.

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Unit Standard

Title	Control Weeds Manually in Plant Propagation and Landscaping
Number	119694
Level	1
Credits	4
Field	Agriculture and Nature Conservation
Sub field	Horticulture
Issue date	2006-02-09
Learning assumed to be in place	Demonstrate knowledge of communication and Numeracy at Abet level 1.

Specific Outcomes	Assessment Criteria
1. Demonstrate an understanding of the objectives of weed control	1.1. Describe the effect that weeds have on desirable plants. 1.2. Describe the rapid re-establishment of weeds. 1.3. Explain the importance of the correct timing of weed control.
2. Select the tools and equipment for manual weed removal.	2.1. Explain the suitability of the tools and equipment for the removal of the specific weeds. 2.2. Inspect the cleanliness and working order of the tools and equipment.
3. Select personal protective equipment (PPE) needed to remove weeds by hand.	3.1. Explain the suitability of the selection of personal protective equipment for the hazards posed by the specific weeds to be removed. 3.2. Inspect and test the selected equipment to make sure it is in correct working condition.

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Specific Outcomes	Assessment Criteria
4. Identify common weeds and their regenerative processes.	<ul style="list-style-type: none">4.1. Classify and give examples of the major weeds.4.2. Identify the stages in the life cycle / development of weeds where removal is essential.4.3. Remove weeds around shallow rooted plants.4.4. Minimize disturbance of the roots of desirable plants.4.5. Inspect the site to ensure that the weeds have been effectively removed.
5. Demonstrate the preparation and procedures for the effective removal of weeds.	<ul style="list-style-type: none">5.1. Give reasons why the area to be weeded must first be watered well.5.2. Give reasons why the soil should be loosened around the weed's stem before it is removed.
6. Conduct effective weed disposal.	<ul style="list-style-type: none">6.1. Identify the weeds that should not be added to the compost heap.6.2. Explain the procedures for handling and disposing of non-compostable weeds.

Embedded Knowledge

Embedded knowledge is reflected within the assessment criteria of each specific outcome and must be assessed in its own right, through oral and written evidence. Observation cannot be the only assessment.

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Critical Cross Field Outcomes

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made – specific outcome 1, 4 and 6.
- Work effectively with others as a member of a team, group, organisation or community. Specific outcome embedded in the learning for this level of learner.
- Organise and manage oneself and one's activities responsibly and effectively. Specific outcome 4 and 5.
- Collect, analyse, organise and critically evaluate information. Specific outcome 1, 4, 5 and 6.
- Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation. Specific outcome embedded in the learning for this level of learner.
- Use science and technology effectively and critically, showing responsibility toward the environment and health of others. Specific outcome 2, 3 and 6.
- Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation. Specific outcome 1 and 4.

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**Unit Standard Accreditation and Moderation
Options**

1. Internal moderation.
2. External moderation.
3. Moderation of assessment will be overseen by the relevant ETQA, according to the moderation guidelines in the relevant qualification the agreed ETQA procedures.
4. Internal assessment.
5. External assessment with the relevant registered/accredited industry body/ETQA.
6. An Assessor accredited by the relevant ETQA, will assess the Learner's competency.
7. Formative and summative assessment of qualifying Learners against this unit standard should be in alignment with the requirements of the NSB.
8. Practical assessment activities will be used that are appropriate to the contents in which the qualifying Learners are working.
9. Assessment will include self and peer assessment, practical and oral assessment, observations, questions and answers, etc.
10. Direct observation is required in simulated or actual work conditions.
11. Reporting skills are demonstrated by effective communication, using verbal and/or writing skills.
12. Assessment is to be structured to include formative and summative component, as well as the submission of a Portfolio of Evidence.
13. The assessment should ensure that all the specific outcomes, critical cross field outcomes and embedded knowledge are assessed.
14. Specific outcomes must be assessed in their own right, through oral and practical evidence and cannot be assessed by observation only.

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Essential embedded knowledge must be assessed in their own right, through oral and practical evidence and cannot be assessed by observation only.

15. Special outcomes and essential embedded knowledge must be assessed in relation to each other.

16. If qualifying Learners are able to explain the essential embedded knowledge, but are unable to perform the specific outcomes, then they should not be assessed as competent.

17. If qualifying Learners are able to perform specific outcomes, but are unable to explain the essential embedded knowledge, they should not be assessed as competent.

18. Evidence of the specified critical cross-field outcomes should be found, both in performance and in essential embedded knowledge.

19. Assessment activities must be fair, so that all Learners have equal opportunities. Activities must be free of gender, ethnic or other bias.

20. This unit standard can be assessed together with any other relevant registered unit standard.

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Who does what?

You are expected to actively take part in the lessons by:

- Asking questions.
- Planning and preparing for your training and assessment.
- Completing the assessment tasks that you are given.
- Telling your trainer when you need help or don't understand.

Your learning will be supported in the following ways:

- Your trainer will provide you with all the necessary training material.
- Your trainer will manage the learning process during the training.
- The assessor will plan and prepare you for assessment, assess your competence and provide feedback to you and arrange any follow up assessments that may be necessary.

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Lesson 1 : Common Weeds

Specific outcomes of this lesson :

**Demonstrate an understanding the objectives of weed control.
Identify common weeds and their regenerative processes.**

After you have worked through Lesson 1, you should be able to:

- Describe the effect that weeds have on desirable plants.
- Describe the rapid re-establishment of weeds.
- Explain the importance of the correct timing of weed control.
- Classify and give examples of the major weeds.
- Identify the stages in the life cycle/ development of weeds, where removal is essential.

What is a weed?

A weed can be defined as:

- Any plant which is growing where it is not wanted.

Weeds are troublesome plants that are very persistent and many weeds can spread and reproduce far better than the plants you are trying to grow. Because of this, you will find weeds almost everywhere - there are weeds in gardens, on lawns, on sports fields, on golf courses and in parks.

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In many cases weeds found in South Africa have come from other countries. These weeds were often not brought into the country on purpose but have found their way into our county as seeds in cattle fodder, on animals and people's shoes.

Why do we need to get rid of weeds?

- Weeds compete with the plants you are trying to grow and if left undisturbed, certain weeds will take over the garden smothering the plants you want to grow.
- Weeds take away from other plants light, nutrients, water and space to grow and so reduce the growth of the plants you are growing plants.
- Weeds interfere with air circulation.
- Weeds can serve as a breeding ground for pests and diseases.

Besides weeds being harmful to other plants that they compete with for food, water and light, there are a number of other reasons why you will want to get rid of weeds:

- Weeds are unattractive and will spoil the look of a garden, golf course, park, etc and make it look unattractive.
- Weeds spoil the most important quality of a lawn which is uniformity.
- Some lawn weeds have thorns and spines which affect our recreational activities.

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Your Turn...

ACTIVITY 1
Working in groups, draw a picture of a garden full of weeds.

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Your Turn...

ACTIVITY 2
In your own words, discuss why we need to get rid of weeds?

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Why are weeds so successful?

Here are some reasons:

- Weeds can produce large amounts of seeds.
- Weeds are survivors and can grow well and produce seed in places that have poor soil and low nutrient levels.
- Weeds compete successfully (are more strong) and have the ability to grow and increase more quickly than other plants.
- Some weeds can produce a new plant from just small pieces of their stem or roots.
- Some weeds can survive by having their main root system cut up through cultivation, forking over an area or leaving some of the roots in the ground after hand weeding.

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Reproduction of weeds

The most common form of reproduction of weeds is from seed and most seeds are spread by:

- Wind
- Water
- Birds
- Animals
- Humans

However, many weeds are so successful not only because they reproduce from seed, but also because they reproduce from some of their parts, such as their:

- Stolons or runners, which spread over the surface of the soil and establish roots at nodal points which make a way into the ground.
- Rhizomes, which are underground shoots which are able to make new leaves and new roots.
- Suckers, which are formed from the shoots rising from below ground roots or stems.
- Bulbs
- Corms, which are thick, fleshy stems covered by scaly leaves and which develop at the base of the stem.
- Small pieces of stem or root.

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Common Weeds

The first step in controlling weeds is to be able to identify what type of weed is growing because knowing what the type of weed is growing helps you to decide how to control the weed. There are two types of weeds:

- **Annuals**

Most weeds that you see in the land are annuals. Annual weeds germinate, grow, flower and set seed and then die within one year or less. Although these weeds seem to survive all abuse during the growing season, they do eventually die at the end of the season. But if you allow them to, they will spread thousands of seeds which will lie in the soil, just waiting for the right amount of light and water that they need in order to germinate.

Because annuals only reproduce from seed, the key to controlling annual weeds is to remove them before they can set seed.

- **Perennial Weeds**

Perennial weeds are tough plants that can live for two or more years and its these weeds that can cause the most serious problems in the lawn and garden. There are two common groups of perennials:

- **Stationary perennials** which mainly reproduce from seed unless their roots are cut up and moved around by the gardener, gardening tools or machinery.
- **Spreading or creeping perennials** which reproduce from both seed and vegetative plant parts such as bulbs, bulbils, stolons, underground rhizomes and rootstock. These weeds keep growing even though they have not been allowed to produce seed.

To control both types of perennial weeds, you need to control their roots. And in most cases, if you leave just a little bit of the root in the ground, the weed will redevelop and appear again.

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Your Turn...

ACTIVITY 3

In your own words, explain:

- **When is it important to control weeds?**

- **How can weeds return quickly?**

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Your Turn...

ACTIVITY 4
Go outside and see if you can find examples of any types of weeds.

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Here is a list of the most common annual weeds that you will come across:

Common Annual Weeds		
Example:	Description:	Reproduction:
Bur Clover <i>(Medicago hispida)</i>	The Bur Clover has a spread of stems coming up from its deep tap roots. Has clover-like foliage and tiny yellow summer flowers. The flowers are followed by 6 mm diameter burs, which have double rows of hooked bristles that stick to socks and pets' fur.	Reproduces only from seed.
Dandelion <i>(Taraxacum officinale)</i>	The dandelion can grow tall and lush and produces bright yellow flowers, which are followed by soft round, fluffy seed heads which children love to blow.	Reproduces only from seed.
Devil's Thorn <i>(Emex australis)</i>	The devil's thorn has light green, broad leaves and light green or yellow flowers. The flowers are followed by woody thorns.	Reproduces only from seed.
Fumitory <i>(Fumaria muralis)</i>	The fumitory has soft, fleshy stem with fine, grayish-green leaves and produces little heads of pink flowers.	Reproduces only from seed.

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Common Annual Weeds		
Example:	Description:	Reproduction:
Prostrate Knotweed <i>(Polygonum aviculare)</i>	The prostrate knotweed has broad, blue-green leaves and tiny flowers that are hardly noticeable. Grows to a height of 300 mm.	Reproduces only from seed.
Shepherd's Purse <i>(Capesella bursapastoris)</i>	The shepherd's purse has tiny white flowers that are followed by heart shaped pods of seeds. Often found in flower borders and vegetable gardens.	Reproduces only from seed.
Small flowered quickweed <i>(Galinsoga parviflora)</i>	The small flowered quickweed grows to less than 50 cm in height and produces tiny white flowers.	Reproduces only from seed.
Spanish Blackjack <i>(Bidens bipinnata)</i>	The Spanish blackjack is best known for its blackjack seeds which stick to socks, jerseys and animals fur. This weed has narrow, black seeds tipped with four strong-barbed awns. Grows to about 1 m in height	Reproduces only from seed.

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Here is a list of the most common perennial weeds that you will come across:

Common Perennial Weeds		
Example:	Description:	Remove by:
Brazilian Paronychia <i>(Paronychia brasiliiana)</i>	The Brazilian paronychia has long leaves and shallow roots. This weed is usually found growing in sandy soils.	Reproduces from seed.
Buckhorn <i>(Plantago lanceolata)</i>	The buckhorn has long leaves and is commonly found on lawns. This weed bears dense, long seed-heads which look like rat's tails.	Reproduces only from seed.
Cat's Ear <i>(Hypochoeris radicata)</i>	A member of the same family as the daisy, the cat's ear has hairy leaves and tall flower stems that bear bright yellow dandelion-like flowers.	Reproduces from seeds and stolons.
Chickweed <i>(Stellaria media)</i>	Have attractive star-like white flowers.	Reproduces from seed.
Common Pigweed <i>(Amaranthus hybridus)</i>	The common pigweed grows to 90 cm or even taller if conditions are ideal. Has dense flower heads which look like cats' tails. Some people eat this plant.	Reproduces only from seed.
Khaki Burweed <i>(Alternanthera pungens)</i>	This flat, spreading weed has small, shiny, green leaves and papery flowers, which prick, commonly called paper thorns.	Reproduces from seed and from small pieces of root or stem left behind in the ground.
Milkweed <i>(Asclepias physocarpa)</i>	The milkweed has small white flowers which are	Reproduces from seed.

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Common Perennial Weeds		
Example:	Description:	Remove by:
	followed by large pale green balloon looking seed structures. Grows to a height of 1.5 m or higher.	
Perennial Pigweed <i>(Amaranthus deflexus)</i>	Reaches a height of 50 cm. Some people eat the young plants or the young leaves of mature plants as a spinach	Reproduces only from seed.
Sheep Sorrel <i>(Rumex acetosella)</i>	The sheep sorrel has narrow leaves and quick spreading root system. It can grow up to 300 and will happily establish itself in the cracks between paths, stoeps or patios as well as in lawns.	Reproduces from seed.

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Your Turn...

ACTIVITY 5
Name the two major types of weeds and give 5 examples of each.

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Lesson Checkpoint

Now that you have worked through this lesson, please check that you are able to do all the specific outcomes and meet the assessment criteria:

- I can describe the effect that weeds have on desirable plants.
- I can describe the rapid re-establishment of weeds.
- I can explain the importance of the correct timing of weed control.
- I can classify and give examples of the major weeds.
- I can identify the stages in the life cycle/ development of weeds, where removal is essential.

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Lesson 2 : Weeding

Specific outcomes of this lesson :

Select the tools and equipment for manual weed removal.

Select personal protective equipment (PPE) needed to remove weeds by hand.

Identify common weeds and their regenerative process.

Demonstrate the preparation and procedures for the effective removal of weeds.

After you have worked through Lesson 2, you should be able to:

- Explain the suitability of the tools or equipment for the removal of the specific weeds.
- Inspect the cleanliness and working order of the tools and equipment.
- Explain the suitability of the selection of personal protective equipment for the hazards posed by the specific weeds to be removed.
- Inspect and test the selected equipment for the correct working conditions.
- Remove weeds around shallow rooted plants.
- Minimize disturbance of the roots of desirable plants.
- Inspect to ensure that the weeds have been effectively removed.
- Explain why the area to be weeded must first be well watered.
- Explain why the soil should be loosened around the weed's stem before it is removed.

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Introduction

As you have just learnt, it is important to get rid of weeds when they are still young plants and to remove them before they form seed. Hand weeding is one of the most common ways of controlling weeds.

Weeding by Hand

Hand weeding is a good way to control most types of weeds, as long as you take care to remove all of the weed as well as its roots.

The easiest time to dig out weeds is when they have just started growing, because as the weeds grow bigger you run the risk of damaging the nearby plant roots and of leaving pieces of the weed behind which can regenerate.

To remove weeds by hand:

- Water before you weed. This will make the soil softer and lessen the chance of you causing any damage to the roots of neighbouring plants.
- Loosen the surface of the soil or growing medium before you pull up the weed because this will make it easier for you to remove the bulbs and roots of the weed and lessen the chance of pieces of the weed breaking off and staying behind and grow again.
- Loosen the soil around the stem of the weeds because this will make it easier for you to remove the weed and lessen the chance of pieces of the weed breaking off and staying behind to grow again.
- Wrap your hand firmly around the stem of the weeds, close to the soil and gently tug on the weed until it comes loose from the soil.
- Check to make sure that all of the weed and its roots have come away and if necessary remove any broken pieces because as you have already learnt, certain weeds will simply re-generate from these broken pieces.

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Your Turn...

ACTIVITY 6

In your own words, answer the following questions:

1. Give reasons why the area to be weeded must first be watered well.

2. Give reasons why the soil should be loosened around the weed's stem before it is removed.

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Tools used in weeding

There are many tools that help can help you to weed. Let's take a look at some of the most common tools used in controlling weeds manually:

Tool:	Description:	Used for:
Weeding fork	A two pronged fork.	<p>Commonly used to remove small annual and perennial weeds that do not have difficult to remove root systems.</p> <p>The fork is prodded into the soil around the weed to loosen the weeds roots, leaving your other hand free to gently pull at the weed.</p> <p>This fork can also be used to make sure that you do not disturb the roots of other plants growing near the weeds.</p>
Dutch Hoe	<p>The most popular and effective tool used in weeding and cultivation is the Dutch hoe.</p> <p>The hoe has a flat, sharp cutting blade which when wielded cuts into the upper part of the soil.</p>	<p>This tool is commonly used on annual and perennial weeds in vegetable patches where there are often large open soil areas and also in agricultural crop planting.</p> <p>The Dutch hoe is used to chop off weeds close to the surface because the hoe barely penetrates the soil when hoeing.</p> <p>Hoeing controls weeds by:</p> <ul style="list-style-type: none">• Cutting the stems off near the soil level.• Stimulating weed seeds to germinate so that they can be destroyed.• By desiccation (drying out) of the roots and rhizomes brought to the surface.• Continually cutting back the growth of deep-rooted perennials, thereby

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Tool:	Description:	Used for:
		draining them of their energy to grow.
Slasher	A sharp hand-held tool.	<p>Commonly used to thrash at the foliage of weeds, cutting the weed's foliage off – normally just above ground level.</p> <p>Often used to ensure that the weed does not seed, especially where time does not allow removing the weeds before seeding.</p> <p>This method relies on:</p> <ul style="list-style-type: none">• Cutting the weed off near the soil.• Continually cutting back the growth of the weeds and draining them of their energy to grow.
Spade	A broad, flat edged digging tool.	<p>A spade can be used in two ways:</p> <ol style="list-style-type: none">1. To cut the weed off just above ground level and used in a similar way to the surface cultivation as a hoe.2. To dig the weed out of the soil. <p>By using a spade you can dig up all of the weeds root system and stop the weed from re-growing.</p>
Garden Fork	A four pronged fork.	<p>A garden fork is used to loosen the soil around the weeds so that they are more easy to remove from the soil.</p> <p>A fork is able to penetrate deeply into the soil and will cause less root disturbance of the other plants than the spade.</p>
Trowel	A hand shovel.	<p>The trowel is used to dig into the soil around the plant loosing it and making it easier to remove.</p> <p>The trowel is useful in removing small annual and perennial weeds and so is often used in the domestic gardening environment.</p>

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Before using any tool it is important to check that the tools are:

- **Clean** because dirty tools can spread diseases and tiny weed seeds.... Clean all the soil or weedy growth off the tools before you put them away.
- **In working order.** Here you will need to check:
 - That the tools are not rusted because rusted tools will not work properly and make your job harder to do. Tools left outside will rust in time, so always make sure that the tools are put away safely at the end of the day.
 - That the tools are sharp, especially the slasher, spades, hoe and forks because blunt tools will not work properly and make your job harder to do.
 - That the handles are not splintered or broken which could cause injury to you. . Cracked, splintered or broken handles should be replaced. Wooden handles should be rubbed down (smooth) with sandpaper and oiled or varnished at least once a year.

Personal protective equipment

Besides choosing the tools you will need to weed, you will also need to choose personal protective equipment. Personal protective equipment needs to be worn to protect your body and your clothes from the thorns, spines and hairy leaves of some weeds which can cause injury to you or irritate your skin.

Let's take a look at what personal protective equipment you will need to remove weeds by hand:

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PPE:	Used for:
Gloves	Gloves are used during weed removal to protect your hands, especially when spiny or thorny weeds need to be removed.
Overalls	Overalls protect your own clothes and your skin, especially when removing weeds that have: <ul style="list-style-type: none">• Thorns or spikes.• Hairy leaves that can cause skin irritation.• Seeds that stick to clothing.
Safety shoes and boots	Safety shoes are important to wear when using sharp, dangerous tools like a slasher or a hoe which could cause nasty cuts and bruises.
Eye protection	Goggles are important to protect your eyes from flying matter, especially when you are using a slasher. Eye goggles will also protect your eyes when working with weeds which can cause eye irritation.

So what tools and PPE should you choose?

Because different tools and equipment are more suitable for the use on certain weeds, let's now take a look at which tools or equipment you should use on the weeds you have already learnt to identify.

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Common Annual Weeds		
Example:	Description:	Remove by:
Bur Clover <i>(Medicago hispida)</i>	The Bur Clover has a spread of stems coming up from its deep tap roots. Has clover-like foliage and tiny yellow summer flowers. The flowers are followed by 6 mm diameter burs, which have double rows of hooked bristles that stick to socks and pets' fur. Reproduces only from seeds.	In beds the young weeds are easy to spot and should be removed by hand as hoeing will not always kill them off.
Common Purslane <i>(Portulaca oleracea)</i>	The common purslane has yellow flowers and a deep tap root system. Reproduces from seeds and from pieces of the weed left behind.	Pull up the entire plant but be careful not to accidentally break off pieces and leave them in the soil because they will take root and re-establish.
Dandelion <i>(Taraxacum officinale)</i>	The dandelion can grow tall and lush and produces bright yellow flowers, which are followed by soft round, fluffy seed heads which children love to blow. Reproduces from seed.	Remove by hand as soon as the young plants appear.
Devil's Thorn <i>(Emex australis)</i>	The devil's thorn has light green, broad leaves and light green or yellow flowers. The flowers are followed by woody thorns. Reproduces from seed.	Hoeing is effective in beds.

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Common Annual Weeds		
Example:	Description:	Remove by:
Fumitory <i>(Fumaria muralis)</i>	The fumitory has soft, fleshy stem with fine, grayish-green leaves and produces little heads of pink flowers. Reproduces from seed.	Hoeing.
Prostrate Knotweed <i>(Polygonum aviculate)</i>	The prostrate knotweed has broad, blue-green leaves and tiny flowers that are hardly noticeable. Grows to a height of 300 mm. reproduces from seed.	Control young plants by hoeing or dig mature plants out individually from beds. It is important to hoe or uproot these weeds before they flowers as each plant produces lots of seeds that can multiply quickly.
Shepherd's Purse <i>(Capesella bursapastoris)</i>	The shepherd's purse has tiny white flowers that are followed by heart shaped pods of seeds. Often found in flower borders and vegetable gardens. Reproduces from seed.	Make sure that the seed doesn't spread and frequently hoe it into the soil before it has a change to flower.
Small flowered quickweed <i>(Galinsoga parviflora)</i>	The small flowered quickweed grows to less than 50 cm in height and produces tiny white flowers.	Hoeing.
Spanish Blackjack <i>(Bidens bipinnata)</i>	The Spanish blackjack is best known for its blackjack seeds which stick to socks, jerseys and animals fur. This weed has narrow, black seeds tipped with four strong-barbed awns. Grows to about 1 m in height. Reproduces only	If found in beds, it can be hoed.

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Common Annual Weeds		
Example:	Description:	Remove by:
	from seed.	
Common Perennial Weeds		
Example:	Description:	Remove by:
Brazilian Paronychia <i>(Paronychia brasiliiana)</i>	The Brazilian paronychia has long leaves and shallows roots. This weed is usually found growing in sandy soils.	Remove roots but be careful not to disturb the seed-heads while uprooting it, as the small seeds are easily scattered by wind.
Buckhorn <i>(Plantago lanceolata)</i>	The buckhorn has long leaves and is commonly found on lawns. This weed bears dense, long seed-heads which look like rat's tails.	
Cat's Ear <i>(Hypochoeris radicata)</i>	A member of the same family as the daisy, the cat's ear has hairy leaves and tall flower stems that bear bright yellow dandelion-like flowers. Reproduces from seeds and stolons.	Uprooted from lawns by hand, if it appears in beds, regular hoeing will cause it to die off.
Chickweed <i>(Stellaria media)</i>	Have attractive star-like white flowers.	Hoeing will keep it down.
Common Pigweed <i>(Amaranthus hybridus)</i>	The common pigweed grows to 90 cm or even taller if conditions are ideal. Has dense flower heads which look like cats' tails. Some people eat this plant. Reproduces from seed.	Hoe if found in garden or vegetable beds.
Khaki Burweed	This flat, spreading	Hoeing in garden and

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Common Annual Weeds		
Example:	Description:	Remove by:
<i>(Alternanthera pungens)</i>	weed has small, shiny, green leaves and papery flowers, which prick, commonly called paper thorns. Reproduces from seed or from pieces.	vegetable beds.
Milkweed <i>(Asclepias physocarpa)</i>	The milkweed has small white flowers which are followed by large pale green balloon looking seed structures. Grows to a height of 1.5 m or higher. Reproduces from seed.	Remove by pulling out or digging.
Perennial Pigweed <i>(Amaranthus deflexus)</i>	Reaches a height of 50 cm. Some people eat the young plants or the young leaves of mature plants as spinach. Reproduces from seed.	Hoeing in garden and vegetable beds.
Sheep Sorrel <i>(Rumex acetosella)</i>	The sheep sorrel has narrow leaves and quick spreading root system. It can grow up to 300 and will happily establish itself in the cracks between paths, stoeps or patios as well as in lawns.	Remove by hand.

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Your Turn...

ACTIVITY 7

Working in groups, discuss:

- **What tools you would choose.**
- **What personal protective equipment you would choose**

To remove the following weeds:

And then explain:

- **Why the tool you choose is suitable for the removal of that specific weed.**
- **Why the personal protective equipment is needed for the removal of that specific weed.**

- **Bur Clover**

- **Common Purslane**

- **Dandelion**

- **Devil's Thorn**

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ACTIVITY 7
<ul style="list-style-type: none">• Fumitory
<ul style="list-style-type: none">• Prostrate Knotweed
<ul style="list-style-type: none">• Shepherd's Purse
<ul style="list-style-type: none">• Small flowered quickweed
<ul style="list-style-type: none">• Spanish Blackjack
<ul style="list-style-type: none">• Brazilian Paronchia
<ul style="list-style-type: none">• Buckhorn
<ul style="list-style-type: none">• Cat's Ear
<ul style="list-style-type: none">• Chickweed
<ul style="list-style-type: none">• Common Pigweed

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ACTIVITY 7
<ul style="list-style-type: none">• Khaki Burweed
<ul style="list-style-type: none">• Milkweed
<ul style="list-style-type: none">• Perennial Pigweed
<ul style="list-style-type: none">• Sheep Sorrel

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Your Turn...

ACTIVITY 8

Go outside and find weeds that need to be removed.

Once you have found some weeds come back inside and choose the tools or equipment that you will need to use to remove these weeds.

Check the cleanliness and working order of the tools and equipment, making a list of what you checked.

Inspect and test the selected equipment for the correct working order, making a list of what you checked.

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Your Turn...

ACTIVITY 9

Go outside and remove the weeds around these shallow rooted plants.

Then inspect the site to make sure that the weeds have been effectively removed and that you have not disturbed the roots of desirable plants.

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Lesson Checkpoint

Now that you have worked through this lesson, please check that you are able to do all the specific outcomes and meet the assessment criteria:

- I can select the tools and equipment for manual weed removal.
- I can select personal protective equipment (PPE) needed to remove weeds by hand.
- I can demonstrate the preparation and procedures for the effective removal of weeds.
- I can explain the suitability of the tools or equipment for the removal of the specific weeds.
- I can inspect the cleanliness and working order of the tools and equipment.
- I can explain the suitability of the selection of personal protective equipment for the hazards posed by the specific weeds to be removed.
- I can inspect and test the selected equipment for the correct working conditions.
- I can remove weeds around shallow rooted plants.
- I can minimize disturbance to the roots of desirable plants.
- I can carry out an inspection to ensure that the weeds have been effectively removed.
- I can explain why the area to be weeded must first be well watered.
- I can explain why the soil should be loosened around the weed's stem before it is removed.

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Lesson 3 : Disposing of Weeds

Specific outcomes of this lesson :

Effective weed disposal.

After you have worked through Lesson 3, you should be able to:

- Identify weeds that should not be added to the compost heap.
- Demonstrate the procedure for handling and disposal of non-compostable weeds.

Introduction

Having learnt about how to remove weeds manually, all you now need to learn is what to do with the weeds that you have removed. Many of you will be used to adding garden refuse into the compost heap, but not all weeds can be added to the compost heap, Let's begin by look at what weeds should not be added to the compost heap.

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**What weeds should not be added to the
compost heap?**

Weeds that should not be added to the compost heap:

- Avoid adding weeds that have formed seeds to the compost heap. Many weed seeds are resistant even if compost is made by the best methods, while seeds on the outside of the heap seldom get hot enough to be destroyed.
- Never add weeds that have corms, nutlets or bulbs attached to them, or they will be distributed all over the garden.

What should you do with these weeds?

Burn all of these weeds in an incinerator which can be found at most municipal dumps or in your workplace or put them into the rubbish bin.

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Your Turn...

ACTIVITY 10
What weeds should not be added to the compost heap?

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Your Turn...

ACTIVITY 11
How would you handle and dispose of non-compostable weeds.

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Lesson Checkpoint

Now that you have worked through this lesson, please check that you are able to do all the specific outcomes and meet the assessment criteria:

- I can identify weeds that should not be added to the compost heap.
- I can explain the procedure for handling and disposal of non-compostable weeds.

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