

# ALEP

*Aboriginal Landcare Education Program*

7

## Install Micro-irrigation Systems



Learning Guide

# CONTENTS

<b>INTRODUCTION</b> .....	<b>1</b>
<b>1. GETTING PREPARED</b> .....	<b>2</b>
1A. COLLECTING INFORMATION .....	2
1B. INSTALLING IRRIGATION SAFELY .....	2
1C. WHAT IS MICRO-IRRIGATION? .....	4
1D. WHY USE MICRO-IRRIGATION?.....	4
1E. MICRO-IRRIGATION PARTS .....	5
1F. TOOLS NEEDED .....	8
ASSIGNMENT 1 – PROJECT RISK ASSESSMENT .....	9
<b>2. DESIGNING A MICRO-IRRIGATION SYSTEM</b> .....	<b>10</b>
ASSIGNMENT 2 – IRRIGATION PLAN.....	11
<b>3. INSTALLING IRRIGATION</b> .....	<b>12</b>
3A. DIGGING TRENCHES .....	12
3B. LAYING OUT THE SYSTEM .....	13
3C. CONNECTING IT TOGETHER .....	13
<b>4. FINISHING AND MAINTAINING THE SYSTEM</b> ....	<b>14</b>
4A. FLUSHING AND CHECKING.....	14
4B. FINISH EARTHWORKS.....	14
4C. DISPOSAL OF WASTE MATERIAL .....	14
4D. TOOL MAINTENANCE.....	14
4E. MAINTAINING THE SYSTEM .....	15
ASSIGNMENT 3 – INSTALL AND CHECK IRRIGATION.....	16
<b>RESOURCES</b> .....	<b>17</b>
RESOURCE 1: BASICS OF GOOD LIFTING .....	17
RESOURCE 2: FLOW RATE .....	18
RESOURCE 3: COMPLETELY WATERING AN AREA .....	20

Student name:.....

Student number:.....

# INTRODUCTION

Welcome to *Install Micro-irrigation Systems*. This learning guide covers information on how to install and maintain irrigation systems in both land management and horticultural situations. For example you might need to be able install micro-irrigation systems when working for councils, carrying out bush regeneration work, ranger work or when managing your own country.

Micro-irrigation can be used to water plants in a nursery, or to water plants that you have planted in the ground, maybe in a park, or in an area of bush. Training should be completed on the job or out in the field over an extended period of time

## EQUIPMENT REQUIRED

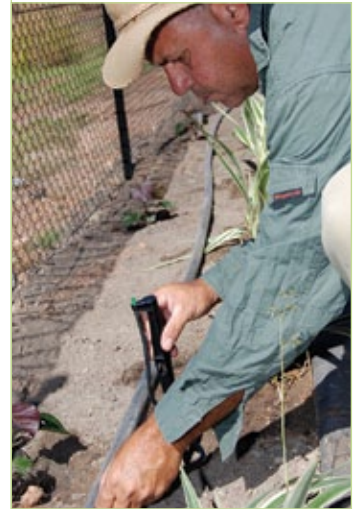
To complete this training you will need the following:

1. Appropriate Personal Protective Equipment (PPE).
2. Safety gear for field work including first aid kit and water.
3. An adequate water supply for irrigation.
4. Pencils, paper, ruler and calculator etc. for planning.
5. Tools for installing irrigation such as shovels, mattocks, pliers and multigrips.
6. Micro-irrigation parts.

## ASSIGNMENTS

There are three assignments you will need to complete.

Some of these assignments may go towards your final assessment.



Section	Assignment	Competent (C) Not yet competent (NYC)	Date Achieved
<b>Getting Prepared</b>	Assignment 1. Project Risk Assessment		
<b>Designing a Micro-irrigation System</b>	Assignment 2. Irrigation Plan		
<b>Installing Irrigation</b>	Assignment 3. Install and Check Irrigation		
<b>Finishing and Maintaining the System</b>			



## 1A. COLLECTING INFORMATION

Information about irrigation systems can be obtained from many sources. Irrigation suppliers often have good information to hand out and can help you design your system. There is also lots of information available online.

1. Irrigation Australia has a range of contacts and resources about irrigation.

 [www.irrigation.org.au](http://www.irrigation.org.au)

2. The Nursery and Garden Industry Association has a range of resources and material available for downloading including best practice water policy.

 [www.ngia.com.au](http://www.ngia.com.au)

3. Information specific to the NT can be found at the Northern Territory Horticultural Association. Download the water section of the *NT Sustainable Land Use Guidelines*.

 [www.ntha.com.au](http://www.ntha.com.au)



Getting information at an irrigation shop

## 1B. INSTALLING IRRIGATION SAFELY

There are some dangers associated with installing irrigation. It is important that you be aware of some of the potential dangers so you can avoid getting injured or sick.

Some of the things you can do to keep yourself safe include:

1. Wear thick gardening gloves at all times.
2. Wear appropriate clothes for outdoors – i.e. at least long trousers, a hat and boots and put sunscreen on.
3. Watch out for snakes, spiders, wasps etc. and rusty iron or broken glass in amongst grass.
4. Keep safe distances away from other workers around hand tools.
5. Learn how to maintain and use hand tools correctly to avoid injury.
6. Keep the site tidy to avoid people tripping over and hurting themselves.
7. Always lift heavy objects correctly to avoid injuring your back (see Resource 1).
8. Extreme caution should be taken with motorised machinery such as trench diggers. Only properly trained people should use motorised machinery.
9. Always carry a first aid kit and make sure someone has a current first aid certificate.

Before you begin, use this checklist to confirm you have followed good safety procedures and have all the right resources.

**SAFETY CHECKLIST ACTIVITY**



Long trousers, shirt and boots		
Hat (hard hat if necessary) and gloves		
Sunscreen, insect repellent and sunglasses		
Water		
First aid kit		
Notified others and have phone/ 2 way radio		
Checked weather, road and fire reports		
Student folder and notebook		
Permits (if required) and maps		



### 1C. WHAT IS MICRO-IRRIGATION?

Micro-irrigation refers to low-pressure irrigation systems that use drippers and sprays to deliver water to the plants. Low pressure is anything below 300 kPa. Micro-irrigation systems use components such as black poly pipes, drippers, sprays, sprinklers and water timers etc. Micro-irrigation systems usually use low density poly pipes and components.

### 1D. WHY USE MICRO-IRRIGATION?

How much water and for how long is one of the most important factors in establishing a successful garden or landscape.

Micro-irrigation systems put water right where you need it and are water saving alternatives to using a hose or sprinkler which waste water. An automatic timer allows you to leave your system for periods of time and your plants still get watered.



### Micro-irrigation systems will deliver the following advantages:

- Apply water only where it is needed.
- Reduce water loss through evaporation and run off.
- Water all your plants at once.
- Encourage deep root growth.
- Save energy as they use smaller pumps and power sources.
- Limit weed growth between plants.
- Cheap and simple to install.
- Suitable for small or irregular shaped areas.
- Can be automated very easily.



### A good micro-irrigation system should:

- Be based on flow rate (litres/hour) of water from the tap.
- Allow flexible watering times.
- Utilise the most efficient spray / dripper on the market.
- Be flushed and cleaned at the start of every dry season.



## 1E. MICRO-IRRIGATION PARTS

### AT THE TAP

You should get help from a plumber or your ESO (Essential Services Officer) to set up this part of the system. The plumber can check to see if you need to install an isolating valve and backflow device before you start. This is because people can get sick if garden water gets mixed up with drinking water.

If a reticulated water supply is not available, a pump will be required to distribute water. The size and type of pump will depend upon how big your system is and the pressure you require.

**If you are using a tap as your water source make sure everyone knows not to touch it, they should use a different tap for everyday needs (you may need to lock the tap).**

It is important to remember that the parts before the timer are under pressure all the time. Poly pipe with ratchet clamps is not strong enough to cope with this. Let your plumber, trainer or irrigation shop work out this part.

#### NOTE

*There are lots of different products on the market – make sure you have all the connecting parts before you start.*

