

# EON EDIBLE GARDENS KEY MESSAGE 1

## LESSON PLANS

### EON EDIBLE GARDENS



#### EON KEY MESSAGE:

To grow your own food you need soil, water and sunshine.

This PDF contains lesson plans for the EON Edible Gardens key message:  
“To grow your own food you need soil, water and sunshine”.

#### LESSON PLANS:

- Choosing the right location.
- Creating good soil for in-ground planting.
- Creating good soil for raised garden beds.
- Testing soil pH.
- Increasing or decreasing soil pH.
- Parts of a plant.
- Plants eat light – photosynthesis.
- Shadecloth installation – bush style.
- Install a basic watering system.
- Water is precious – tips to save it.



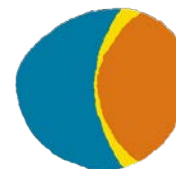
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EON HEALTHY EATING 

# Choosing the right location

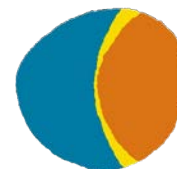


KEY MESSAGE:	To grow your own food you need soil, water and sunshine.
BACKGROUND:	Location is important when it comes to growing vegetables. Plants 'eat' light for food- this is called photosynthesis. Veggies need at least 6 hours of sunlight a day to grow productively. They need a reliable water source, something to grow in and/or on and high-quality soil as a foundation.
LESSON FOCUS:	Garden design, location and aspects. Things to consider when designing a garden. Creating a design mud map.
RESOURCES/EQUIPMENT:	<i>This activity will require some preparation.</i> Sketch paper, pencils, compass
OUTLINE:	<ol style="list-style-type: none"> <li>1. Head out to the space that has been dedicated for your new garden. Start your map by taking notes of existing features - taps, trees, lawn area, buildings etc.</li> <li>2. Find true north on the compass and take note of North, South, East &amp; West. Consider how shadows from surrounding features like buildings or trees will change the amount of sunlight on your garden space over the coming seasons. The sun will always rise in the east and set in the west however the path of the sun will change according to the season. Remember that a veggie garden needs around 6 hours of direct sunlight every day.</li> <li>3. Wind patterns – if your garden is in a remote location, strong desert winds can be very damaging to the garden. Does this apply to your space?</li> <li>4. Find your water source, whether that be a tap for a hose, sprinkler or small reticulation controller. Consider who will be responsible for watering the garden and how will they do it?</li> <li>5. What will your vegetable garden be growing in? Direct into the ground? Raised garden bed? Old bath or even big pots?</li> <li>6. Take notes on all of the above and create your map of the garden. Take it back into the classroom for more discussion.</li> </ol>

## LESSON GUIDE

# Choosing the right location

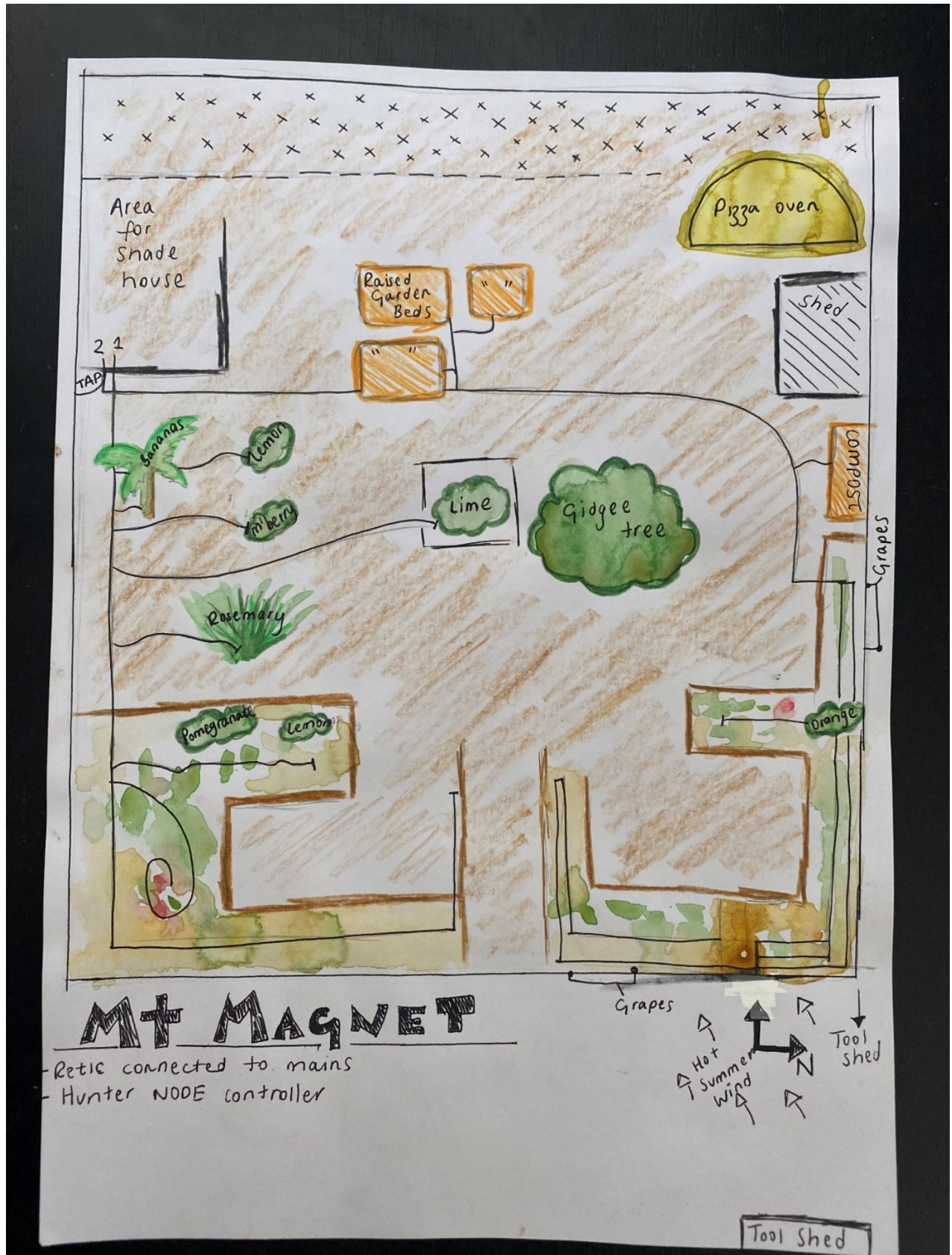
EON EDIBLE GARDENS

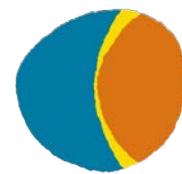


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REFLECTION ACTIVITY:	<p>Extend this task by generating conversation about what the garden might start to look like, what vegetables and fruit trees could grow and in what seasons. Draw another map of what that would look like.</p> <p>Find photo examples or videos of other vegetable gardens to gain ideas.</p>
CLEAN UP:	<p>Replace pencils Store map for future tasks</p>
APPROPRIATENESS:	<p><input checked="" type="checkbox"/> KK-Year 2    <input checked="" type="checkbox"/> Years 3-6    <input checked="" type="checkbox"/> Year 7 plus</p>
EXTENSION IDEAS:	<p>Develop mapping and geography skills by creating a key for the map and labelling existing features.</p>

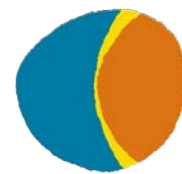
# Choosing the right location





KEY MESSAGE:	To grow your own food you need soil, water and sunshine.
BACKGROUND:	Soil is made up of sand, silt, clay, rocks and organic matter. You need good quality soil to grow good quality fruit and vegetables.
LESSON FOCUS:	<p>What is soil?</p> <p>How to create ideal soil conditions for fruit and vegetable gardens planted directly into the ground.</p> <p>Adding the right organics.</p>
RESOURCES/EQUIPMENT:	<p><i>This activity will require some preparation.</i></p> <p>Chosen garden bed or space, soil, organics, shovels, garden forks, wheelbarrow, gloves, face mask.</p>
OUTLINE:	<p>There are a number of ways to obtain soil for vegetable growing; bagged vegetable potting mix (normal potting mix is for pots, not vegetables), a landscape supply blended vegetable mix which could be delivered, or if you are lucky enough to have access use soil and manure from cattle yards or stations in the area near to you (more applicable to very remote locations).</p> <p><b>Preparing the ground for direct planning</b></p> <ol style="list-style-type: none"> <li>1. Shape and size – mark out the area for the garden bed ensuring there is access to all parts of the garden for ongoing maintenance. An area approximately 1-meter-wide x however long you desire is recommended.</li> <li>2. If the area has any grass growing, ensure it is thoroughly removed prior to garden installation. You can remove grass through solarization, physical removal or chemical intervention.</li> <li>3. Clean the area – dig out weeds, old plants, roots etc.</li> <li>4. Loosen the soil to avoid compaction – use garden forks and shovels to disturb soil to around 20 cm deep. This helps water to penetrate and the new plant roots to grow comfortably.</li> <li>5. Test the pH of soil. An ideal result is 7pH (see the ‘Testing soil pH’ lesson plan to remedy readings outside of this result).</li> </ol>





	<ol style="list-style-type: none"> <li>6. Add organics – most soils will benefit from organic additions such as manures and composts. Compost, cow, sheep and goat manures can be used liberally but chicken and horse manure should be used with caution (see “How to fertilize your garden” section). Dynamic lifter, blood and bone, and soil from cattle yards can also be added at this stage.</li> <li>7. Be sure to use water to help loosen the soil and to water in the organics.</li> <li>8. Soil consistency should be damp and fluffy, with lots of earthy smells.</li> <li>9. Leave the garden bed to sit and settle for a few days or up to a week. Water regularly during this time.</li> <li>10. You can also add mulch to help retain the moisture and avoid the soil drying up.</li> </ol>
REFLECTION ACTIVITY:	<p>Measuring and area – maths</p> <p>Creating a planting plan for veggies – science</p> <p>Working in a team</p>
CLEAN UP:	<p>Hose in and around the area to make sure no manures are left in mass.</p> <p>Wash hands and fingernails well.</p> <p>Pack up all tools.</p>
APPROPRIATENESS:	<p><input checked="" type="checkbox"/> KK-Year 2    <input checked="" type="checkbox"/> Years 3-6    <input checked="" type="checkbox"/> Year 7 plus</p>
EXTENSION IDEAS:	<p>Extend the garden beds.</p>

## LESSON GUIDE

# Creating good soil for in-ground planting.

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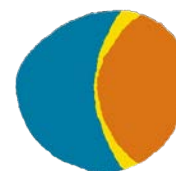


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## Creating good soil for raised garden beds

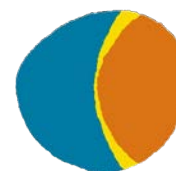


### EON EDIBLE GARDENS

KEY MESSAGE:	To grow your own food you need soil, water and sunshine.
BACKGROUND:	Soil is made up of sand, silt, clay, rocks and organic matter. You need good quality soil to grow good quality fruit and vegetables.
LESSON FOCUS:	<p>What is soil?</p> <p>How to create ideal soil conditions for fruit and vegetables planted in raised garden beds.</p> <p>Adding the right organics.</p>
RESOURCES/EQUIPMENT:	<p><i>This activity will require some preparation</i></p> <p>Chosen garden bed or space, soil, organics, shovels, garden forks, wheelbarrow, gloves, face mask</p>
OUTLINE:	<p>There are a number of ways to obtain soil for vegetable growing; bagged vegetable potting mix (normal potting mix is for pots, not vegetables), a landscape supply blended vegetable mix which could be delivered, or if you are lucky enough to have access use soil and manure from cattle yards or stations in the area (more applicable to very remote locations).</p> <p><b>Raised garden beds</b></p> <p>Raised garden beds are an easy, low maintenance, space-friendly option to growing veggies. There are many different and creative options; bath tubs, larger food-grade plastic containers, old water tanks or stock troughs. Some things to consider about your 'new' recycled garden bed are: has the item been used to store any toxic herbicides or chemicals; can the item still leach toxic chemicals (e.g car tyres, old railway sleepers); and will it have adequate drainage? If you have the budget, pre-made raised garden beds are also a great option too.</p> <p><b>Preparing the soil for raised garden beds</b></p> <ol style="list-style-type: none"> <li>1. Choose a good location and assemble the garden bed.</li> <li>2. Be sure to install a weed barrier between the ground and the soil in your garden bed - a weed mat and then layers of thick cardboard are suggested, especially if working with couch grass.</li> </ol>



# Creating good soil for raised garden beds



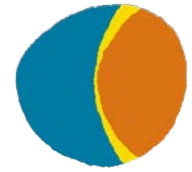
## EON EDIBLE GARDENS

	<p>Cardboard on its own will break down eventually, and black plastic can impair good drainage.</p> <ol style="list-style-type: none"> <li>3. A raised garden bed approximately 2m long x 1m wide will take around 1 cubic meter of soil and organics to fill.</li> <li>4. Soil (tested to be at a 7pH) can be added in many ways; via wheelbarrow loads, bagged vegetable soil mix, using large plastic pots, or if you are very lucky with the help of a small loader. It should take around 45mins to fill.</li> <li>5. Most soils will benefit from organic additions such as manures and composts. Compost, cow, sheep and goat manures can be used liberally but chicken and horse manure should be used with caution (see “How to fertilize your garden” section). Dynamic lifter and blood and bone can also be added at this stage.</li> <li>6. Be sure to use water during to help loosen the soil and to water in the organics.</li> <li>7. Soil consistency should be damp and fluffy, with lots of earthy smells.</li> <li>8. Leave the garden bed to sit and settle for a few days or up to a week. Water regularly during this time.</li> <li>9. You can also add mulch or newspaper to help retain the moisture and avoid the soil drying up.</li> </ol>
<p>REFLECTION ACTIVITY:</p>	<p>Measuring volume and area – maths                  Creating a planting plan for veggies – science                  Working in a team</p>
<p>CLEAN UP:</p>	<p>Hose in and around the area to make sure no manures are left in mass.                  Wash hands and fingernails well.</p>
<p>APPROPRIATENESS:</p>	<p><input checked="" type="checkbox"/> KK-Year 2    <input checked="" type="checkbox"/> Years 3-6    <input checked="" type="checkbox"/> Year 7 plus</p>
<p>EXTENSION IDEAS:</p>	<p>Creating a seasonal planting plan and guide for your new garden bed.</p>

## LESSON GUIDE

# Creating good soil for raised garden beds

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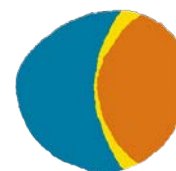


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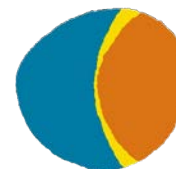


Installing pre-made raised garden beds.

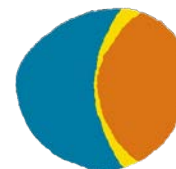
## Testing soil pH



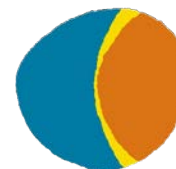
KEY MESSAGE:	To grow your own food you need soil, water and sunshine.
BACKGROUND:	Soil pH has a big affect on healthy plant growth. The makeup of soil and its acidity determine the extent to which nutrients are available to plants.
LESSON FOCUS:	Testing soil pH level Alkaline, Neutral and Acidic Ideal pH level is 7.
RESOURCES/EQUIPMENT:	<i>This activity would require some preparation.</i> Margarine containers to collect soil for testing, vinegar, baking soda, distilled water and measuring cups and spoons.
OUTLINE:	<ol style="list-style-type: none"> <li>1. Explain how soil is made up from sand, silt, clay, rocks and organic matter.</li> <li>2. Explain how plants will absorb nutrients more easily if the pH level is correct.</li> <li>3. Collect a cup of soil from the garden, divide it into x2 containers.</li> <li>4. Add ½ cup of vinegar to one container, if it fizzes, you have alkaline soil with a pH of between 7 and 8. If it doesn't fizz, add distilled water to make mud. Add ½ cup of baking soda. If it fizzes you have acidic soil, with a pH of between 5 and 6. If there is no reaction the pH is neutral (7).</li> <li>5. Set up groups of students to conduct tests.</li> </ol>
REFLECTION ACTIVITY:	Grow the same seed in 3 different soil pH conditions
CLEAN UP:	Clean equipment as required. Discuss putting things away safely. (Correct storage) Wash hands, including cleaning nails using a nail brush.
APPROPRIATENESS:	<input checked="" type="checkbox"/> KK-Year 2 <input checked="" type="checkbox"/> Years 3-6 <input checked="" type="checkbox"/> Year 7 plus
EXTENSION IDEAS:	Math activities – measuring. Science activities – mixing chemicals



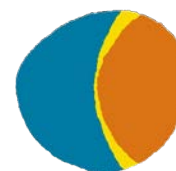
KEY MESSAGE:	To grow your own food you need soil, water and sunshine.
BACKGROUND:	Creating a good pH level for the plants you want to grow. Some plants like more acidic soils, while others prefer more alkaline.
LESSON FOCUS:	Increasing pH level with lime. Decreasing pH level with organic materials. Alkaline, Neutral and Acidic.
RESOURCES/EQUIPMENT:	<i>This activity would require some preparation.</i> Wheelbarrows, margarine containers, lime compound, organic material, black soil, clay, sand, crumbly rocks, water, hand trowels and buckets.
OUTLINE:	<ol style="list-style-type: none"> <li>1. Establish the pH of the soil.</li> <li>2. Explain what adding lime will do to the pH.</li> <li>3. Explain what adding organic matter to the soil will do.</li> <li>4. Divide students into groups with a wheelbarrow or large tub to mix their own soil.</li> <li>5. Test pH of students' soil mix and add required element to achieve desired pH level.</li> </ol>
REFLECTION ACTIVITY:	What plants like alkaline, neutral or acidic soil?
CLEAN UP:	Clean equipment as required. Discuss putting things away safely. (Correct storage) Wash hands, including cleaning nails using a nail brush.
APPROPRIATENESS:	<input checked="" type="checkbox"/> KK-Year 2 <input checked="" type="checkbox"/> Years 3-6 <input checked="" type="checkbox"/> Year 7 plus
EXTENSION IDEAS:	Math activities – measuring. Science activities – understanding soil make-up.



KEY MESSAGE:	To grow your own food you need soil, water and sunshine.
BACKGROUND:	All plants have stems, roots, flowers and leaves.
LESSON FOCUS:	Students will be able to identify and describe the basic parts of a plant.
RESOURCES/EQUIPMENT:	<i>This activity will require some preparation.</i> Paper, paint/pencils/crayons, scissors, glue
OUTLINE:	<ol style="list-style-type: none"> <li>1. Draw a picture of a plant on the board.</li> <li>2. Ask your students to tell you what you have just drawn.</li> <li>3. Ask your students to make suggestions for the labels of the parts.</li> <li>4. Discuss the parts of the plant with your students.</li> <li>5. Distribute handout of plant parts for students to cut around and assemble once they have coloured it in.</li> <li>6. Take students to the garden to identify parts of different plants.</li> </ol>
REFLECTION ACTIVITY:	<p>What do the roots do? (<i>Roots hold plants into the ground.</i>)                      How do the roots help keep a plant alive? (<i>Takes in water and minerals to help the plant stay alive.</i>)                      What purpose do leaves serve? (<i>Leaves take in air and light.</i>)                      What does the stem do? (<i>Carries water and food from the roots to other parts of the plant.</i>)                      What does the flower do? (<i>Helps the plant reproduce, making seeds that will grow into new plants.</i>)</p>
CLEAN UP:	<p>Clean equipment as required.                      Discuss putting things away safely. (Correct storage)                      Wash hands.</p>
APPROPRIATENESS:	<input checked="" type="checkbox"/> KK-Year 2 <input checked="" type="checkbox"/> Years 3-6 <input checked="" type="checkbox"/> Year 7 plus
EXTENSION IDEAS:	<p>Discussion about what plants need to survive? Sun, air, water, soil.                      Lifecycle of a plant.                      Comparing what we need to survive - is it the same/similar to a plant?</p>

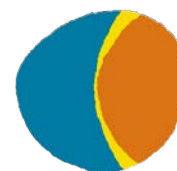


KEY MESSAGE:	To grow your own food you need soil, water and sunshine.
BACKGROUND:	Most plants on earth need light to survive. Just like humans needing food to eat and grow, plants use sunlight to make their food and generate energy. This process is called photosynthesis. Plants create the oxygen we breathe when they photosynthesise.
LESSON FOCUS:	Looking at a plant's anatomy How does a plant eat? What is photosynthesis? How is oxygen created?
RESOURCES/EQUIPMENT:	<i>This activity will require some preparation</i> 2 potted plants of similar stages of growth and health. A different location for each plant – one light, one dark. An observation sheet. Pencil.
OUTLINE:	<p>Plants need sunshine to grow and function. When plants are growing in their optimal environment, they can photosynthesise and create oxygen.</p> <p>Plants absorb carbon dioxide and sunshine from the earth's atmosphere through their leaves, and water from the soil through their roots.</p> <p>They will then break down the carbon dioxide and turn this into sugar which they store for energy. The water is turned into oxygen and is released into the air. This process is called photosynthesis. Humans and most animals on the planet need oxygen to breath!</p> <ol style="list-style-type: none"> <li>1. Draw a picture of a plant and label the parts of the plant.</li> <li>2. Inspect the two plants that you are using for your class, what do they look like? Are they healthy? What colour are their leaves? Are they standing up straight or drooping? Write these observations down.</li> <li>3. Talk about plants and how they photosynthesise.</li> <li>4. Discuss what might happen if a plant doesn't have access to light.</li> <li>5. Put one of your plants in a light and sunny location. Put the other in a cupboard away from light.</li> </ol>



	<ol style="list-style-type: none"> <li>6. Lightly water both plants daily. Treat them both the same apart from the different light and locations.</li> <li>7. After 5 days assess the condition of both plants and discuss the differences between them. How does the one without light compare to the one with plenty of it?</li> <li>8. Record your observations.</li> </ol>
REFLECTION ACTIVITY:	<p>What do the leaves do? <i>Absorb light and carbon dioxide</i></p> <p>What do the roots do? <i>Draw up water and nutrients</i></p> <p>Do all plants need light? <i>No. Research together some plants that don't need light to survive (carnivorous plants, swamp plants)</i></p>
CLEAN UP:	<p>Transfer the plants to the veggie patch if edible</p> <p>Tidy up observation sheets and pencils.</p>
APPROPRIATENESS:	<p><input checked="" type="checkbox"/> KK-Year 2    <input checked="" type="checkbox"/> Years 3-6    <input checked="" type="checkbox"/> Year 7 plus</p>
EXTENSION IDEAS:	<p>Look at videos of plants responding to too little or too much light.</p> <p>Conduct further research on the process of photosynthesis.</p>

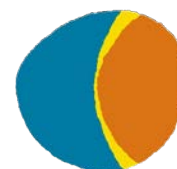




KEY MESSAGE:	To grow your own food you need soil, water and sunshine.
BACKGROUND:	Sometimes too much sunshine can harm our plants and gardens. This lesson will give options on how to protect our vegetables from the sunshine by building a very simple shade structure.
LESSON FOCUS:	Installing shade cloth, “bush” style
RESOURCES/EQUIPMENT:	<p><i>This activity will require some preparation</i></p> <p>50% shade cloth (blocks 50% of UV rays from sun)          UV rated or metal cable ties          Ag pipe/ poly pipe          Hammer          Star pickets or wooden stakes          Tape measure          Scissors          Rope (if needed for bracing)</p>
OUTLINE:	<p>As vital as sunlight is to plants, too much can cause severe damage and stress. Burnt leaves and fruit, dried out soil and stunted growth are just some symptoms of too much sunlight.</p> <p>A simple way of protecting the vegetables in our garden is by installing protection with shade cloth.</p> <p>There are many ways to put up shade cloth, but a simple “bush” approach is to build a small shade structure directly above the garden.</p> <ol style="list-style-type: none"> <li>1. Measure the length of the garden bed to be covered. Depending on the length of your garden, you will need between 3-5 stakes on each side of the garden for good support.</li> <li>2. Ensure that the stakes you have chosen will fit the circumference of the ag or poly pipe. The pipe needs to fit over the top of each stake. The stakes will be the main support for the structure.</li> <li>3. The “roof” of your structure should be at least 1 meter above the garden bed, to allow for accessibility from the sides and ensure good air flow.</li> </ol>



# Shade cloth installation “bush” style

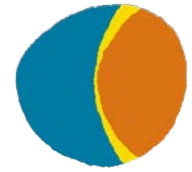


	<ol style="list-style-type: none"> <li>4. Each length of pipe needs to form an arch from a stake on the left-side of the garden to the matching stake on the right-hand side – as well as allow for approximately 1 metre in height between the 2 stakes (refer to photo at the end of this lesson plan). Cut equal lengths of piping.</li> <li>5. Hammer stakes into ground, evenly spaced on both sides of the garden bed. Feed pipe from a left-hand stake to the matching right-hand stakes, working your way along the length of the garden bed.</li> <li>6. Inspect you work. If the structure is large it may need to be braced down on both ends to avoid movement.</li> <li>7. Gather shade cloth and place over pipes. Ensure that there is enough shade cloth evenly distributed over all the pipes before cutting. Once you are satisfied that If all areas needing sun protection are covered, cut the shade cloth. (Measure twice cut once).</li> <li>8. Fit the shade cloth and secure with cable ties working from left to right and then front to rear, ensuring cloth is tensioned and will not catch the wind.</li> <li>9. Both ends of shade cloth can be braced down if need be.</li> </ol>
<p>REFLECTION ACTIVITY:</p>	<p>What other areas of the garden could use protection from the sunshine?</p> <p>How could the structure be made bigger or smaller to suit the conditions?</p>
<p>CLEAN UP:</p>	<p>Tidy up all tools Cut cable ties and place into bin or recycling</p>
<p>APPROPRIATENESS:</p>	<p><input checked="" type="checkbox"/> KK-Year 2    <input checked="" type="checkbox"/> Years 3-6    <input checked="" type="checkbox"/> Year 7 plus</p>

# LESSON GUIDE

## Shade cloth installation “bush” style

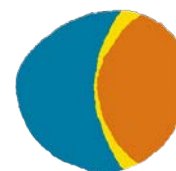
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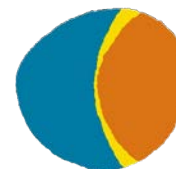
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## Install a basic watering system



<p><b>KEY MESSAGE:</b></p>	<p>To grow your own food you need soil, water and sunshine.</p>
<p><b>BACKGROUND:</b></p>	<p>Just like humans, plants need water to survive.</p> <p>The root system of a plant is its watering system. A plant’s roots are incredibly intelligent and can ‘hear’ water and seek it out when needed, For example the huge old trees in the forest or in your local park will have long tap roots that have helped the tree to survive for many years by finding the water table. This answers the age-old question of what comes first, the root or the shoot. It is in fact the root, in its search for water.</p> <p>Successful vegetable gardens require regular watering to keep the plants alive. There are many ways to water a garden - with a watering can, by hose and most reliably with a small reticulation system.</p> <p>There are many things to consider when implementing watering regimes for your garden. Location, rainfall, season, types of plants growing and more importantly how often and when to water.</p> <p>Gardens in remote, hot climate communities require a more vigilant and reliable water regime to that of a garden in a cooler region.</p> <p>Using a small battery-operated reticulation controller you can rest easy, trusting that the garden is being watered - especially on weekends and over school holidays. This is a very basic example of an automated reticulation controller system set up, and installation with a hose and sprinkler.</p>
<p><b>LESSON FOCUS:</b></p>	<p>Installation of a basic reticulation controller system</p>
<p><b>RESOURCES/ EQUIPMENT:</b></p>	<p><i>This activity will require some preparation</i></p> <p>Access to a tap for the dedicated use of the reticulation controller – so be sure to get permission to use the tap.</p> <p>A battery-operated reticulation controller.</p> <p>Battery.</p> <p>A hose that fits to the controller and can reach the garden bed.</p> <p>A sprinkler with the range to water all of the garden bed.</p>

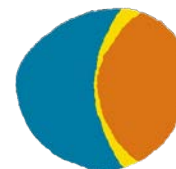


<p>OUTLINE:</p>	<ol style="list-style-type: none"> <li>1. Purchase the battery-operated reticulation controller that you have chosen, and be sure to remember the battery.</li> <li>2. Most basic, small controllers are simple to install. Check that yours comes with clear installation instructions.</li> <li>3. Install the controller to the dedicated tap. Remember to seek permission to use the tap for this purpose.</li> <li>4. Screw the controller onto the mouth of the tap mouth, and connect your watering hose to the snap on the hose connector on the controller.</li> <li>5. Connect the sprinkler to the watering hose and position the sprinkler in the garden.</li> <li>6. Insert the battery and turn on the controller. Follow the instructions in the controller’s manual to set up the current date and time, and your required watering schedule.</li> <li>7. The water schedule will depend on the season, location and weather patterns. General recommendations for a watering schedule in locations with dry summers and rainfall in winter are;             <ul style="list-style-type: none"> <li>• Summer – 10 mins early morning and evening, each day</li> <li>• Winter – 10 mins in early morning, each day</li> </ul> <p>This will change according the specific whether patterns in your location seek out advice from local gardeners.</p> </li> <li>8. Turn on the tap and inspect all the tap to hose fittings, ensuring there are no leaks or water loss.</li> <li>9. Test the controller with your programmed watering schedule over several days, and adjust if required. If you are not onsite over a weekend, do you testing early in the week so you can observe for leaks, spills, over/ under watering and other issues that would be hard to fix over a weekend.</li> <li>10. Keep tap turned on to ensure watering schedule will operate.</li> <li>11. Water is precious so be mindful of overflow and overuse, and adjust the controller to suit your situation.</li> <li>12. See “Water is precious – water saving” lesson plans for tips and tasks for conserving water in your garden.</li> </ol>
<p>REFLECTION ACTIVITY:</p>	<p>Look at the annual rainfall, and timing of rain, in your region. Consider how this impacts local native flora.</p> <p>How much water do different plants need? For example, vegetable garden vs native garden.</p>

## LESSON GUIDE

# Install a basic watering system

EON EDIBLE GARDENS



**EON** Foundation

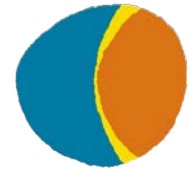
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	<p>Research the water table in your local region.</p> <p>Discuss hydrology, what is it? Would you like to be a hydrologist?</p>
CLEAN UP:	<p>Keep the controller manual in a handy place in case its needed for troubleshooting.</p> <p>Tidy up all loose items and dispose of any packaging.</p>
APPROPRIATENESSES:	<p><input checked="" type="checkbox"/> KK-Year 2    <input checked="" type="checkbox"/> Years 3-6    <input checked="" type="checkbox"/> Year 7 plus</p>
EXTENSION IDEAS:	<p>There are slightly more advanced reticulation fittings instead of a hose and sprinkler. Using 13mm poly pipe with connections and a dripline for watering is a great and water efficient option too.</p>

## LESSON GUIDE

# Install a basic watering system

EON EDIBLE GARDENS



**EON** Foundation



Example of a simple battery-operated reticulation controller. Refer to the manual on the next page.



**CO1605** E5675  
**INSTRUCTION MANUAL**

**Glossary**

1. Universal Tap Adaptor
2. Tap Connection
3. Union Nut
4. LCD Display
5. Control Buttons
6. Battery Compartment
7. Clear Screw-on Cover
8. Snap-on Hose Connection



**Introduction**

**CO1605 - Digital Tap Timer**

Thank you for purchasing this device, please read the operating instructions carefully to familiarise yourself with the features and modes of operation before using the Digital Tap Timer.

**Tap Timer Installation**

Make sure the washer is in place, then screw the tap timer to the tap. Turn it clockwise (hand tighten only).

**NOTE:** There should be no need to use thread seal tape, as long as the tap seals onto the washer.

**Battery Installation**

- Hold the tap timer with the battery compartment facing you.
- Remove the battery compartment tray.
- Connect a 9V battery to the battery connector.
- Insert the connected battery and push in the battery tray.

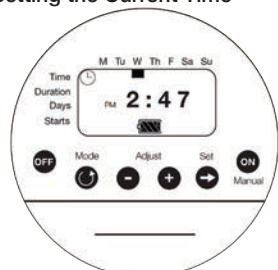
**NOTE:** When changing a battery, the timer will hold program if you fit the new battery within 2 minutes.



**NOTE:** When changing the battery, make sure the battery compartment stays dry.

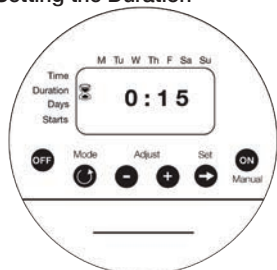
**USE ONLY 9V ALKALINE BATTERIES**

**1. Setting the Current Time**



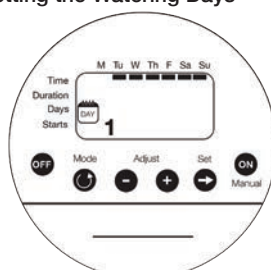
1. Press **ON** until the clock is displayed in the top left corner next to "Time". This means you are in "Time" mode.
2. Press **→** and the hour will flash.
3. Press **+** or **-** to adjust the hour.
4. Press **→** to select the minutes.
5. Press **+** or **-** to adjust the minutes.
6. Press **→** to select the day (the black box will be flashing).
7. Press **+** to reach the current day. Press **→** to save the day.

**2. Setting the Duration**



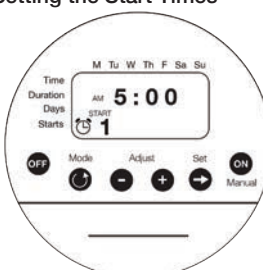
- "Duration" is the length of time you want the water to run for.
1. Press **ON** until the hour glass is displayed on the left next to "Duration". This means you are in "Duration" mode.
  2. The hour display will be flashing, press **+** or **-** to adjust the hour.
  3. Press **→** to select the minutes.
  4. Press **+** or **-** to adjust the minutes.

**3. Setting the Watering Days**



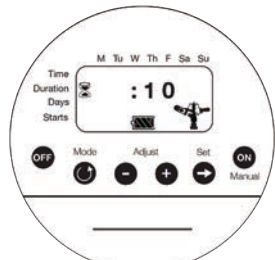
- "Days" is where you select what day(s) you want to water on.
1. Press **ON** until the calendar is displayed on the left next to "Days". This means you are in "Day" mode.
  2. Press **ON** and the black box under "M" will flash.
  3. Press **→** to select that day, press **-** to deselect that day.
  4. Press **→** to scroll through the days, press **+** if you need to reselect that day.
  5. Press **ON** to save the schedule.

**4. Setting the Start Times**



- "Starts" is the time of day you want your watering to begin. You can schedule up to 4 start times per day.
1. Press **ON** until the alarm clock is displayed in the bottom left corner next to "Starts". This means you are in "Starts" mode.
  2. Start "1" is the time you want your watering to first begin. Use **+** or **-** to adjust the hour.
  3. Press **→** then **+** or **-** to adjust the minutes.
  4. Press **ON** to change to the next start time and repeat steps 2 & 3.
  5. To turn a start time "OFF" adjust the "hour" until it reads "OFF".

**Manual Operation**



- ON** "Manual", allows you to manually turn on your tap timer and set a watering duration. **NOTE** - this will not effect your automatic schedule.
1. Press **ON** to begin manual watering. The preset time is 10 minutes. This will start automatically unless the duration is changed.
  2. Manually set the duration time using **+** or **-**
  3. Once the watering duration has finished the tap timer will automatically end watering and return to the automatic schedule.

**Suspending Operation**

**How to suspend the automatic scheduling**  
Use this feature when you want to temporarily suspend the automatic schedule.

This feature is generally used when it has been raining or during winter.

**Suspension:** Press **OFF** and the sprinkler off icon will appear. The schedule is now suspended.

**Cancel suspension:** To resume the automatic schedule press **OFF**

Manual operation can still be used during suspension.

**Troubleshooting**

**How to stop watering**  
To stop manual or automatic watering press **OFF**

**Low battery warning**  
The battery indicator has 5 levels. 4 levels of battery and 1 flashing bar when the battery is flat. The tap timer will not water when the battery is in this mode. We advise to change the battery when it is down to 2 bars to ensure reliable watering.

The schedule will be retained in the tap timer for approximately 2 minutes while changing the battery.

**Water not turning on**  
Ensure that the tap timer is not displaying the water off icon. If it is press **OFF** until it disappears.

**Irrigation Programming**

- OFF** Press to end manual or automatic watering.
- Press to scroll through the programming modes.
- Press to decrease time or eliminate a day.
- +** Press to increase time or add a day.
- Press to select a function.
- ON** Press to begin manual watering.

**Maintenance**

Remove the battery if the tap timer will not be used for a long period of time. The tap timer contains an internal filter which has to be removed and cleaned every few months. For longevity of the tap timer ensure to clean the filter on a regular basis.

**Technical Data**

- HOLMAN - Digital Tap Timer
- Product code - CO1605
- Maximum Water Pressure - 600 kPa
- Minimum Water Pressure - 60 kPa
- Flow Rate - 19L/min at 200 kPa
- Power Source - 9 Volt Alkaline Battery
- Power Consumption - 20 micro amps in standby mode.

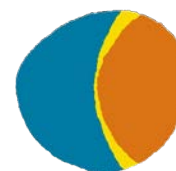
**Warranty**

We will honour all statutory guarantees that this product is of acceptable quality. (Including that it is fit for purpose)

HOLMAN INDUSTRIES  
11 Walters Drive,  
Osborne Park, WA 6017

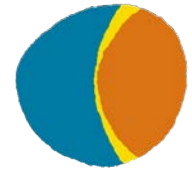
Ph: 1300 716 188  
www.holmanindustries.com.au





KEY MESSAGE:	To grow your own food you need soil, water and sunshine.
BACKGROUND:	<p>Every drop of water is precious and all steps need to be taken to conserve and preserve water when growing vegetables.</p> <p>There are some very simple and easy tasks we can do in the garden to help keep the water where its needed most, in the soil and root systems of the vegetables.</p>
LESSON FOCUS:	<p>Water conservation</p> <p>Adding wetting agents</p> <p>Newspaper, cardboard</p> <p>Mulch</p> <p>Watering times</p>
RESOURCES/ EQUIPMENT:	<p><i>This activity will require some preparation</i></p> <p>Depending on the tasks to complete you may need:</p> <p>Liquid or granulated wetting agent</p> <p>Mulch – lupin, wheaten, pea straw or chop/drop</p> <p>Old newspapers, cardboard, shredded paper</p> <p>Hose</p> <p>Wheelbarrow</p> <p>Gloves</p> <p>Hats</p>
OUTLINE:	<p><b>Wetting agents</b></p> <p>A wetting agent in the veggie garden helps to breakdown any hydrophobic (water repelling) elements of the soil and allow water molecules to hold better and for longer. Sandy soils in particular require more wetting agents than clay-based soils.</p> <p>Wetting agents come in both liquid and granular forms. There are also good organic homemade solutions you can make yourself, however they often don't last as long as commercial agents.</p> <p>A wetting agent should be used every season to ensure maximum water holding capacity, especially in extremely dry and hot climates. It is particularly useful to apply it at the start of our long summers when gardens and soil need water the most.</p>





Application is simple. Read the instructions on your chosen wetting agent, and use the amounts recommended. Granular wetting agents can be applied like “feeding the chickens” -throwing it lightly around the garden. Liquid wetting agent can be applied with a watering can.

#### **Newspaper and cardboard**

Using old newspaper and cardboard is a great way to recycle, and to protect the soil in the vegetable garden. It acts as a weed barrier and as an extra layer of protection below the mulch. Newspaper is generally preferred as it is much easier to source and to handle, however cardboard works well in larger garden beds and below fruit trees.

Using newspapers with non-toxic dyes is ideal, however most newspapers will be suitable. Avoid thickly coated heavy-stock paper as it takes a long time to break down and has a plastic casing.

Soaking the newspapers in water in the wheelbarrow as you go helps to keep things manageable and there will be less paper flying in the wind - or simply hose the newspaper as you go (a great job for kids to do). Layer the newspapers 2-3 sheets thick and ‘stitch’ together, ensuring all bare soil is covered. You can then plant seeds and seedlings directly into the newspaper.

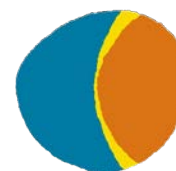
#### **Mulch**

Mulching your garden to retain moisture is vital, regardless of climate and location. Using newspaper as a barrier prior to mulching helps to stop any stray seeds in the mulch from germinating, as well as suppressing weeds. Adding mulch provides support, structure and protection to your soil and your plants. Different mulch should be used for different garden beds and plant requirements.

Vegetable gardens benefit from soft, light colored, breathable mulches that can be dug into garden beds after vegetable crops are harvested. This helps to add carbon and life to your soil.

Recommended mulches for veggie gardens include ; pea straw, lupin wheaten and “chop and drop crops” such as lemongrass, banana leaves, moringa and large leafy greens like silver beet. Avoid

## Water is precious – tips to save it.



	<p>using leaves and plants for mulch that are high in acidity (such as eucalyptus leaves or pine needles) or have seeds that can cause weeds to grow in your garden. Light coloured mulches help to deflect strong UV rays away from your veggies.</p> <p>Pine chips, wood bark and recycled mulch is great for fruit trees, pathways and any other problem areas in your garden.</p> <p>Mulch helps retain water in soil – moisture that would otherwise be lost to hot weather and evaporation. It also helps protect the millions of microbes, fungi and insects that live within soil and are vital for soil health and vitality.</p> <p><b>Watering times</b>                  Selecting the optimum times to water your garden can also assist with saving water. Hosing plants during the hottest time of day can burn the leaves and create climates for pests and diseases. Choosing cooler times such as in the early morning and evening can ensure the plants get maximum time to soak up the water.</p>
<p>REFLECTION ACTIVITY:</p>	<p>What are some other ways we could preserve water in the garden?</p> <p>Which plants in nature are the ‘thirstiest’, and which ones require very little water?</p> <p>How much water does a watermelon need to grow?</p>
<p>CLEAN UP:</p>	<p>Tidy up.                  Use all mulch if possible.                  Hose mulch down to avoid it being lost in the wind.                  Pack tools away</p>
<p>APPROPRIATENESS:</p>	<p><input checked="" type="checkbox"/> KK-Year 2    <input checked="" type="checkbox"/> Years 3-6    <input checked="" type="checkbox"/> Year 7 plus</p>