Reel GARDENING

THE PLANTING REVOLUTION






THE REEL EASY GUIDE TO GROWING

A SIMPLE GUIDE TO GARDEN CARE AND MAINTENANCE

GETTING STARTED

WHAT TOOLS DO YOU NEED?

The only tools you really need to get planting are your green fingers. But a few extra's do make the job easier. Ask if anyone in your community can lend you these garden tools if you don't have your own.

SPADE

You will need a spade to dig out your paths and create your planting beds.

RAKE

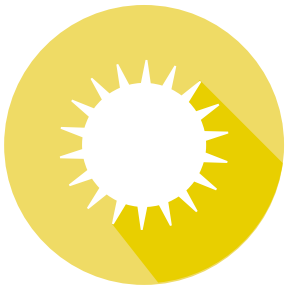
You will need a rake to remove large stones and even out and flatten your beds.

FORK

You will need a fork to loosen the hard ground and put air into the soil.

CHOOSING YOUR LOCATION

Your garden will need:



FULL SUNLIGHT

This means 5-8 hours of sunlight a day. Look around your garden in the morning and the afternoon to make sure your chosen spot gets enough sunlight.

CLOSE TO WATER

You will need to water your garden everyday. Make sure it is close to a tap if possible. You will need to use a watering can or a hose pipe to water your garden.

PROTECTED

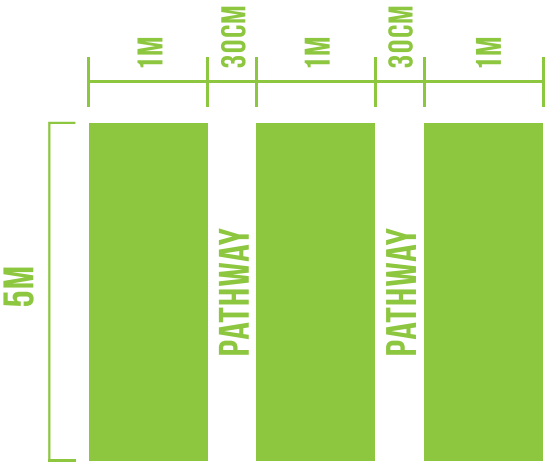
Your garden should be fenced off or protected from local animals who will eat your vegetables or stand on your plants.

CHECKING THE SOIL

BEFORE PLANTING YOU NEED TO CHECK THAT YOUR SOIL ISN'T TOO SANDY OR TOO CLAY

Test by wetting the soil and using your hands to make it into a sausage shape. Now bend the sausage. If it holds its shape and bends without breaking, the soil is too clay. If it doesn't hold its shape at all, it is too sandy. If it holds the shape but breaks when bent, it is just right. To fix clay soil you can add sandy soil or compost. To fix sandy soil you can add compost.

PREPARING YOUR BEDS



STEP 1 Clear the land of all stones, building material, weeds and grass.

STEP 2 Turn the soil so that the whole fork head (300mm) can slide easily into the ground.This gives the roots enough room to develop.

STEP 3 Add compost and fertiliser to the soil.
* SEE PAGE 11, 12 AND 14

STEP 4 Check that there are no ants that will eat your seeds out of the soil. If there are, you will need to get rid of them before planting.
* SEE PAGE 9

STEP 5 Mark out your beds according to the measurements above, 1m wide x 5m long. Dig all the top soil from the paths out and put it on top of your beds. This makes the beds taller and makes the best use of the nutritious top soil. Water can also gather in the paths and won't wash away your plants during heavy rains.

HOW TO USE THIS PRODUCT

BENEFITS

1. SAVES 80% WATER
2. CONTAINS TOP QUALITY OPEN-POLLINATED SEED
3. CONTAINS SLOW RELEASE ORGANIC FERTILISER
4. INDICATES WHERE PLANS WILL SPROUT, ENABLING EASY WEEDING
5. PROTECTS THE SEED FROM BIRDS
6. PAPER DEGRADES CREATING MORE NUTRIENTS IN THE SOIL
7. EASY PLANTING
8. PRODUCT IS HAND-MADE, CREATING LOCAL EMPLOYMENT

PLANNING

COMPANION PLANTING

Once you have chosen your location, you need to plan which plants you will plant where. Certain vegetables, herbs, and flowers have beneficial effects on each other when planted together. This is called companion planting. For example:

 AND  PUT NITROGEN BACK INTO THE SOIL THAT GREEN LEAFY VEGETABLES LIKE  NEED. SPRAWLING VEGETABLES LIKE  AND  CREATE A LIVING MULCH THAT COVERS AND PROTECTS THE SOIL. TALL, STURDY PLANTS LIKE PROVIDE A TRELLISING STRUCTURE FOR CLIMBING PLANTS LIKE  AND  .

	YES	NO
		
		
		
		
		
		
		
		
		POTATOES
		

	YES	NO
	HERBS	

BUTTERNUT
BASIL
CHILLI
CABBAGE
GREEN BEANS
CORIANDER
PUMPKIN
CARROT
GEM SQUASH
BROCCOLI
TOMATO
PEAS
PARSLEY
ROCKET
BEETROOT
SPINACH
LETTUCE
ONION
SWEETCORN
GREEN PEPPER

COMPANION PLANTING FOR PEST CONTROL

Some herbs and flowers chase away pests that will harm your plants and some bring beneficial insects such as bees into your garden. Reel Gardening includes these Companion Plants in our boxes to help you keep your garden healthy.

NASTURTIUMS

- Attract beneficial insects such as bees into your garden.
- The best trap crop to lure pests such as aphids and white fly away from your vegetables.
- Contain high levels of vitamin C so eat the peppery leaves and flowers (raw, in salads or in soups) when you have a cold.
- Plant with all vegetables, especially tomato, cabbage, and broccoli.

MARIGOLDS

- An excellent insect repellent that kills nematodes (microscopic parasitic worms) and deters many pests such as white fly and sap-sucking insects. Soak with boiling water and leave to cool to make a tea to spray on plants for aphids, ants, slugs and harmful fungi.
- The bright flowers bring beneficial insects to the garden.
- Plant with all vegetables, especially tomato and cabbage.

SUNFLOWERS

- The bright flower attracts beneficial insects into the garden.
- Provides a trellis for climbing vegetables such as beans or peas and shelter for shade-loving plants.
- Dying heads and stalks are very good for your compost heap.
- Plant with all vegetables, especially sweetcorn and squash but not potatoes.

GARLIC CHIVES

- The white flowers attract beneficial insects to the garden.
- Their smell keeps many harmful insects away from your garden, especially the carrot worm. They also prevent mildew.
- Plant with carrots, tomato and squash to improve flavour but not with peas.

BASIL

- The scent repels sap sucking insects, flies, hornworm and mosquitos and helps prevent mildew.
- Grow basil with tomatoes to improve their flavour as well as peppers and lettuce.

PARSLEY

- Flowers attract many beneficial insects to the garden.
- Parsley is high in potassium, magnesium, calcium and iron so add it to your food!
- Plant with tomato, carrots, sweet-corn, and onions but not with mint.

CORIANDER

- Flowers attract both the beneficial pollinators and the predators that will eat the harmful pests in your garden.
- The strong smell repels sap-sucking insects such as aphids and beetles.
- Plant with cabbage, tomato, beans, chillies, lettuce and summer squashes.

LAVENDER

- Flowers almost all year round, bringing beneficial insects such as bees and butterflies to your garden.
- Strong smelling leaves keep harmful insects such as aphids and white fly away. Plant a border of lavender around a vegetable garden to deter rats.
- Can act as a medicine for humans including as an antiseptic and anti-inflammatory.

CROP ROTATION

Some plants take a lot of nutrients out of the soil, some don't take much at all and others actually give nutrients back. In order to ensure that the soil stays healthy, we need to make sure that we don't plant heavy feeders straight after each other every season. Plant givers or light feeders after heavy feeders to give the soil a break. This is called CROP ROTATION.

HEAVY FEEDERS

TOMATOES
CABBAGE
BROCCOLI
BEETROOT
SUNFLOWERS
GEM SQUASH
BUTTERNUT
SWEETCORN

MEDIUM FEEDERS

BASIL
CARROTS
CHIVES
ONIONS
PARSLEY
SPINACH

LIGHT FEEDERS

LETTUCE
SPINACH
NASTURTIUM
MARIGOLD

GIVERS

BEANS
PEAS
COVER CROP

BUGS AND PESTS

NOT ALL BUGS ARE BAD

Some insects are actually good for your garden and should be encouraged to make it their home. Some of these insects are pollinators that help the plant produce fruits and some are carnivores that eat the pests that harm your garden. Before killing an insect you need to decide whether it is helping or harming your garden. Ask yourself:

IS THE INSECT HARMING THE VEGETABLES?

- **YES** → **IS THERE AN INFESTATION OF THESE INSECTS?**
  - **YES** → **Spray with the home-made pest control formula. If that does not work try a stronger organic pesticide.**
  - **NO** → **Leave the insect on the plant and observe for a few days. If a predator insect doesn't eat the pest and it continues to harm your plants, spray with home-made pest control formula. This doesn't apply to snails which should be removed immediately.**
- **NO** → **ENCOURAGE THEM TO LIVE IN YOUR GARDEN BY PLANTING FLOWERS**

GOOD INSECTS

Before killing any insect you find in your garden, do some investigating to make sure it isn't a beneficial bug. Beneficial insects include predators that eat harmful insects, pollinators that move pollen around and parasites that kill larger pests. These insects will help your garden:

BEES + BUTTERFLIES

- Important pollinators in any garden.
- Pollinators move pollen from one plant to another and from male to female parts of the same plant as they collect their food.
- This fertilises the plant so that it can produce seeds and fruit.
- Bees and butterflies eat both the pollen and the nectar of the flower.
- To invite more bees and butterflies into your garden, plant bright, beautiful flowers for them to eat from.
- Bees like purple, blue, white and yellow flowers and butterflies like red and orange ones.

LADYBUGS

- Can eat an enormous amount of harmful insects such as aphids, red spider mites and the larvae of leaf-eating insects.
- One adult ladybug can eat up to 400 aphids a day!

DRAGONFLIES

- Can fly very fast and have great eye-sight. This makes them excellent hunters in the garden.
- Dragonflies eat many sap-sucking insects such as aphids and whiteflies and small leaf-eating insects.

SPIDERS

- Eat small insect pests that harm your garden by trapping them in their webs.
- Many people are scared of spiders but most of them are not harmful to humans.

PRAYING MANTISES

- Ruthless killers that eat many beetles, bugs and caterpillars that can kill your plants.
- However they sometimes eat the good bugs too. Watch any praying mantises that make your garden their home to ensure that they aren't eating too many beneficial insects. If so, move them.

WASPS

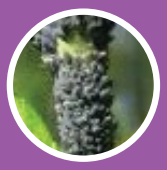
- Come in two varieties that each protect your garden in their own way. Small parasitic wasps lay their eggs inside pests. The newly hatched baby wasps will kill the pest as they grow. Larger predatory wasps need protein in their diet and therefore eat slugs, stink-bugs and caterpillars.

EARTHWORMS

- Very important for maintaining healthy soil. They clean the soil, keep it aerated and build soil fertility through their digestion of organic matter.
- Invite earthworms to your garden by keeping the soil moist and adding lots of organic matter for them to eat.

HOME-MADE PESTICIDE

This will work for small infestations of whitefly, aphids, caterpillars and most other sap sucking insects.


3 GARLIC BULBS

7 CUPS WATER

1 TEASPOON DISHWASHING LIQUID

12 SMALL HOT CHILLI OR 6 LARGE PEPPERS

1 TABLESPOON VEGETABLE OIL

CHOP THE CHILLIES AND GARLIC.
MIX ALL INGREDIENTS TOGETHER.
POUR INTO A SPRAY BOTTLE.
SPRAY ON PLANTS. REAPPLY AFTER RAIN OR WATERING.

PEST DETERRENTS

GOOD GARDENERS TAKE STEPS TO STOP PESTS FROM ENTERING THEIR GARDENS IN THE FIRST PLACE. THERE ARE MANY ORGANIC GARDENING TIPS AND TRICKS THAT CAN HELP PREVENT A PEST PROBLEM.

COMPANION PLANTING — Companion planting is a great way to deter pests by planting herbs and flowers.

SALT + PEPPER — Sprinkle salt and pepper around your garden to deter snails and slugs.

BEER — Snails and slugs also love beer. Pour a little beer into a container (e.g. yogurt) and place it in the ground. The snails and slugs will be drawn to the beer and will fall in and drown.

LAVENDER — Lavender repels rats and mice and will attract butterflies to the garden.

EGGSHELLS OR SAWDUST — Crushed eggshells or sawdust can be placed around the base of plants that are being eaten by snails and slugs. **THIS WONT WORK WITH EGGSHELLS FROM BOILED EGGS.**

COMMON PESTS

Sometimes, no matter what preventative steps you take, you still end up with a pest problem. In order to get rid of these pests, you need to know what type of pest you are dealing with. Different pests have different pest control methods. One organic pesticide that works for many different pests can be made with ingredients you already have in your kitchen. See recipe on Page 8. **Common pests you might find in your garden include:**

APHIDS

Very small pear-shaped insects. Can be green, pink, grey or black. Cluster on plants and suck the sap. Young shoots, buds and leaves are vulnerable.

AFFECTS:

CONTROL:

- Use a strong hose to spray off with water.
- Encourage predatory insects like ladybirds.
- Plant nasturtiums as a trap crop.
- Ants protect aphids. Control ants to control aphids by sprinkling coffee grounds at the base of the affected plant.

CUTWORMS

Fat, white/ grey or light brown coloured worm. Curls up when unearthed. Chews straight through roots and stems of plants during the night, especially young seedlings. Noticeable by healthy plants falling over at the soil level.

AFFECTS:

CONTROL:

- In the day cutworms stay just below the surface of the soil. Dig around the base of plants in the affected area to unearth cutworms and kill them.
- Protect seedlings by placing toilet rolls or aluminium foil as collars around the base of plants. Also push a thick twig 5- 8cm deep next to the plant stem to prevent cutting.

SNAILS + SLUGS

Come out mostly at night and on cloudy days. Need a moist environment to survive. Look for leaf damage and a silvery trail. Affects all seedlings but especially leafy vegetables.

AFFECTS :

CONTROL:

- Eliminate dark, moist places where snails are likely to hide (underneath logs).
- Make a beer trap.
- Plant trap plants like nasturtiums.
- Lay crushed eggshells around the base of plants.

WHITEFLY

Very small insects that gather in groups on the underside of leaves. Sucks sap, kills leaves and spreads disease.

AFFECTS:

CONTROL:

- Spray with soapy water.
- Plant nasturtiums to deter from other plants.
- Use home-made pest control formula.
- Encourage spiders and ladybugs into your garden.

ANTS

Sometimes ants can benefit the garden by eating pests and aerating the soil. But large colonies will eat your seeds and young shoots and even nurture pests such as aphids. Affects all plants.

CONTROL:

- Can be repelled by planting plants with strong smells such as garlic or mint.
- Spray the area with pest control formula.
- If the problem is severe, locate the ant nest and pour 2 litres of boiling water directly into the hole to kill the queen. Repeat for 3-4 days.

CATERPILLARS

Caterpillars are well camouflaged so you will usually only know you have a problem by the large holes in your leaves. Also look for dark droppings on leaves and around the plant. If there are only a few caterpillars leave them to become pollinating butterflies.

AFFECTS ALL PLANTS BUT ESPECIALLY:

CONTROL:

- Pick the caterpillars off one by one and kill them to stop them laying eggs and reproducing.
- Place aluminium foil on the ground around affected plants. It will reflect the sky and confuse pests.
- Plant flowers to attract predator insects.

MILLIPEDES

Usually millipedes are not a problem in the garden as they eat decomposing matter and help aerate the soil. However when there are large numbers of them, they will start to eat young shoots and roots. They stay just below the surface of the soil and roll into a coil when disturbed.

AFFECTS :

CONTROL:

- In case of an infestation, physically remove and kill when tilling the soil.
- Create a millipede trap: Stab holes big enough for millipedes to crawl through into a cold drink can half way up. Place carrot and potato skins in the can. Bury the can so that the holes are just below the surface. Millipedes will climb in but won't be able to get out. Once a week remove can and dispose. Replace if necessary.

MEXICAN BEAN BEETLE

Can easily be confused with a ladybug, but this beetle is more orange in colour with a light head, not black like a ladybug. A ladybug will never eat your leaves but the Mexican Bean Beetle will skeletonize leaves by feeding from the underside. Recognisable by the characteristic lace-like leaf damage.

AFFECTS :

CONTROL:

- Remove and burn severely affected plants.
- Create an organic pesticide: Fill a 5l bucket with water. Add 1 tablespoon of paraffin or cooking oil. Collect as many of the beetles as you can find and drown them in the mixture. Repeat every day, using the same bucket. Let the mixture stand for 1 week. Dilute 3:1 with water and spray onto affected plants.

RATS

Rats are devastating to the vegetable garden, and will eat any plants they can.

CONTROL:

- You cannot control rats by killing them, as more will come. You need to establish what is attracting the rats to the area and remove it. Rats could be attracted to rubbish dumps, sewage, and incorrectly disposed waste.
- Plant lavender all around your garden. The rats don't like the smell.
- Encourage owls with owl boxes.

MOLES

Characterised by mounds appearing above the ground. Moles don't actually eat vegetables, rather earthworms. Whilst searching for worms they will destroy the roots of your plants.

CONTROL:

- Dig an empty wine bottle upside down into the ground, leaving the top open. The reverberations will chase the moles away.

BIRDS

Birds will destroy your seedlings and ripening fruit. They can be devastating for your garden. Birds are very clever so you will need to try many methods to get rid of them.

AFFECTS ALL YOUNG SEEDLING, LEAFY VEGETABLES AND RIPENING FRUIT

CONTROL:

- Erect a scarecrow with lots of moving parts.
- Hang old CDs all around the garden to catch the light and scare off the birds.
- Mount plastic packets on sticks. They will make a noise in the breeze and chase away birds.
- Cover plants with a net thin enough to let sunlight through.

CARING FOR YOUR GARDEN

COMPOST

Compost is decomposed organic matter that looks and feels like crumbly black soil. It is great for adding nutrients to your soil, retaining moisture, providing food for earthworms, reducing erosion and maintaining soil temperature. Compost can be made by building your own compost heap.

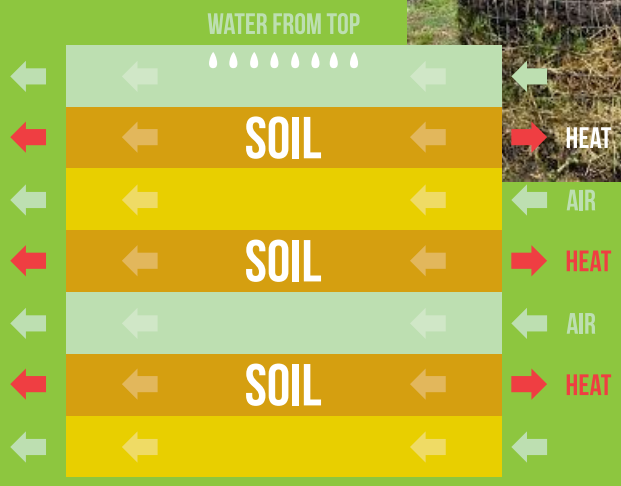
BUILDING A COMPOST HEAP

1. Find a corner of the garden to start your compost heap. Your compost heap should be at least 75cm wide and 75cm high to generate enough heat.
2. Use a fence, logs, bricks or any material you have to build the walls of the compost heap so that it can grow tall.
3. Put down a layer of brown material.
4. Add green and brown material as you have them available. The leaves of carrots, beetroot and beans will add a lot of nutrients to your compost so be sure to add them after harvest.

5. Every time you add materials follow with a thin layer of soil.
6. Turn your compost every week.
7. Make sure It isn't too wet or too dry. If it is dry, add some water; if wet, add brown materials.
8. It should become hot to the touch; if not add more green material.
9. It will take between 4 weeks and 1 year to make compost.
10. It should NOT SMELL. If it does you need to turn it more often.
11. If you find earthworms in your garden add them to the compost.

A COMPOST HEAP CAN EITHER BE BUILT INSIDE A STRUCTURE OR SIMPLY AS A MOUND ON TOP OF THE SOIL. HOWEVER IT SHOULDN'T BE MADE INSIDE A HOLE IN THE GROUND, THIS IS BECAUSE THE ORGANIC MATTER IN THE HOLE WON'T GET ENOUGH AIR TO ASSIST DECOMPOSITION. WHETHER A STRUCTURE OR A MOUND, IN ORDER TO KEEP IN THE MOISTURE YOU SHOULD COVER THE HEAP LOOSELY WITH A TARP OR PLASTIC SHEETING.

CONTINUE TO PG 12 TO LEARN WHAT COMPOST IS MADE OF



WHEN IS THE COMPOST READY?

- IT SMELLS LIKE SOIL
- IT LOOKS CRUMBLY AND DARK BROWN LIKE SOIL

WHAT IS COMPOST MADE OF?

WATER AIR

BROWN MATERIAL


BRANCHES AND TWIGS

EGG CARTONS



STRAW + HAY

WOOD CHIPS



SAWDUST

FEATHERS



CUT UP CARDBOARD + PAPER

GREEN MATERIAL


GRASS CUTTINGS

EGG SHELS



USED TEA BAGS

DEAD FLOWERS



GARDEN PLANTS + WEEDS

VEGETABLE CUTTINGS FROM COOKING


DO NOT INCLUDE


MEAT

DIARY PRODUCTS



CANS

GLASS



PLASTIC

DISEASED PLANTS



NAPPIES

DOG OR CAT POOP


MULCHING

Mulch is organic matter that is layered on top of garden beds.

HOW TO MULCH:

STEP 1 Mulch should be applied when seedlings are 3-5cm tall.

STEP 2 Spread the mulch over the ground around the plants.

STEP 3 Each month assess the layer of mulch and cover with another layer if it has been depleted. Mulch can be 5-15cm thick. If using fresh grass cuttings, keep the mulch under 4cm thick as the grass can become too dense and slimy, preventing water and air from reaching the roots. For a thicker mulch add dried leaves to the grass first.

STEP 4 Keep the mulch away from the bases of tender young plants as it can cause the stems to rot. Aim to keep a circle of 4cm clear around the stems.

WHY SHOULD WE MULCH?

KEEPS WEEDS FROM GROWING BY SMOTHERING THEM

KEEPS MOISTURE IN THE SOIL

KEEPS THE TEMPERATURE IN THE BED EVEN, PROTECTING THE ROOTS FROM HOT OR COLD

PROTECTS THE SOIL FROM EROSION AND FROM CRUSTING OVER

ADDS NUTRIENTS TO THE SOIL

DETERS PESTS

IF VEGETABLES ARE STRUGGLING, MULCH WITH COMPOST

MULCH CAN BE TURNED INTO THE SOIL AT THE END OF A SEASON TO ADD ORGANIC MATTER TO THE SOIL

WHAT TO USE AS MULCH

- GRASS CLIPPINGS
- STRAW OR HAY
- CARDBOARD
- SMALL STONES
- NEWSPAPER
- LEAVES
- WOODCHIPS
- COMPOST

HOME-MADE FERTILISER

Nothing in the garden goes to waste! Waste products can be turned into mulch, compost or home-made fertiliser. Fertilisers add essential nutrients to the garden that help your plants grow big and strong and resist pests.

HOME-MADE FERTILISER IS A GREAT WAY TO ADD NUTRIENTS TO THE SOIL. BUT BE CAREFUL NOT TO OVER FERTILISE AS THIS CAN HARM YOUR PLANTS. APPLY FERTILISER NO MORE THAN ONCE EVERY TWO WEEKS, UNLESS YOU HAVE IDENTIFIED A REAL PROBLEM.

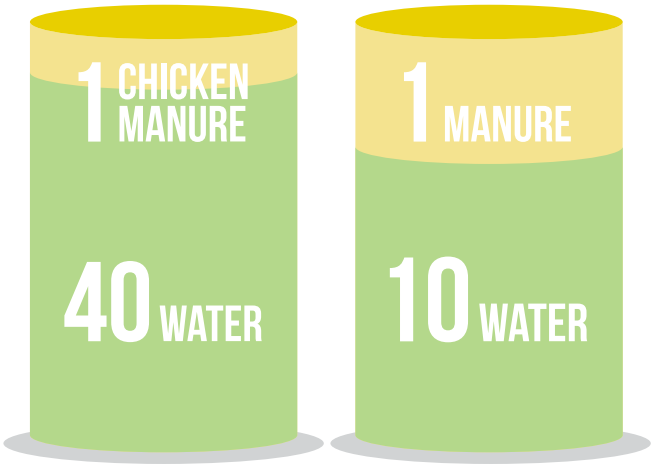
FERTILISER RECIPES:

REMEMBER: IT IS BETTER TO ADD A WEAK FERTILISER TO YOUR GARDEN MORE OFTEN THAN TO ADD A RICH ONE SPARSELY. SO DILUTE YOUR FERTILISER BEFORE USE TO PREVENT BURNING YOUR PLANTS. FOR A STRONGER FERTILISER, LEAVE TO SOAK FOR 3-5 WEEKS. DILUTE 1 PART FERTILISER TO 10 PARTS WATER BEFORE USE.

LIQUID MANURE

Animal manure can be soaked in water to make nutritious home-made fertiliser. Manure from cattle, goats, sheep, cows, horses and chickens will work. Chicken manure is very strong and needs to be diluted more than other types of manure.

Fill a bucket with the correct parts water and manure, cover, and leave in a shady spot for 1 month. Dilute 1 part fertiliser to 2 parts water before applying to the garden.



WEEDS AND GRASS

Fill an available bucket or container with cut grass and weeds. Cover with water. Let sit for 3-7 days. Use the liquid to water plants (especially spinach). Repeat after 2 weeks.

COMPOST TEA

If your plants look like they need an extra boost you can use your compost to make a nutritious fertiliser that can be applied through water. Similar to weed or grass teas, soak the compost in water for 3 days to a week. Place the compost in a hessian sack. Tie closed with string. Suspend sack from a stake across the top of the drum or container. Dilute and water your garden with the mixture.

EPSOM SALTS

This household item is a great way to fertilise fruiting plants such as tomatoes, chillies and green peppers. Add one tablespoon of Epsom Salts to 4 litres of water, and water your plants.

TRELLISING

Trellising is a way to provide support for your climbing plants with the help of a structure.

WHY WE SHOULD TRELLIS

1. LIFTS FRUIT OFF THE GROUND TO PREVENT ROTTING AND ENCOURAGE EVEN RIPENING
2. ALLOWS FOR ADEQUATE AIRFLOW TO PREVENT DISEASE
3. THINNING THE PLANT OUT ALLOWS FOR EASIER MONITORING AND CONTROLLING OF PESTS
4. MAXIMISES USABLE SPACE BY ALLOWING FOR VERTICAL GROWING
5. IMPROVES FRUIT PRODUCTION

BUILDING A TRELLIS

Be sure to build a sturdy structure for your heavier plants. You don't want your trellis to collapse before you've had a chance to harvest.

TRELLISES CAN BE MADE USING STRONG STICKS, BAMBOO, PLASTIC PIPING OR ANYTHING ELSE YOU CAN FIND. SEE THESE PICTURES FOR SOME IDEAS:

WHAT VEGETABLES SHOULD BE TRELLISED

SOME VEGETABLES NEED THE STRUCTURE AS THEIR STEMS ARE TOO WEAK TO SUPPORT THE WEIGHT OF THEIR FRUIT AND SOME VINE PLANTS ARE MEANT TO CLIMB. THESE ARE . SOME VEGETABLES ARE NATURAL SPRAWLERS AND WHILST THEY CAN SPREAD ALONG THE GROUND JUST FINE, THEY CAN ALSO BE TRELLISED TO CREATE MORE SPACE IN A SMALLER GARDEN. THESE ARE .

TRANSPLANTING

In order to thin out your vegetable plants, you will need to transplant some of the seedlings that are growing too close to each other.

THINNING OUT SEEDLINGS PRODUCES HEALTHIER PLANTS BY:

GIVING PLANTS THE ROOM THEY NEED TO GROW
REDUCING THE COMPETITION FOR WATER AND NUTRIENTS BETWEEN PLANTS
ALLOWING FOR GOOD AIR CIRCULATION, REDUCING RISK OF DISEASE

WHEN AND HOW TO TRANSPLANT SEEDLINGS:

- Beetroot and spinach seeds are actually clusters of seeds and will produce many seedlings from a single seed site. These will need to be thinned out.
- Wait until seedlings are about 6cm tall. Any smaller and they won't be strong enough to survive the transplant.
- Wet the soil and dig down to loosen the earth. Be careful not to damage the roots when gently pulling the plants apart.
- Replant the removed plants in another location.
- YOU CANNOT TRANSPLANT CARROTS. Weaker, smaller plants should be removed during the thinning out process and added to the compost heap.

COMMON PROBLEMS

PROBLEM 1: MY SEEDS DIDN'T COME UP AT ALL

POSSIBLE REASON:	SOLUTION
A. NOT ENOUGH TIME HAS PASSED	Remember that organic, natural, open-polinated seeds take longer to germinate than the more readily available genetically modified seeds that you may be used to planting with. Give your seeds 10-14 days to germinate before worrying. Once seeds have germinated they will grow faster and stronger than GMO seeds.
B. TEMPERATURES ARE TOO COLD	Seeds need to be kept relatively warm to germinate. If you planted too close to winter or experienced an unexpected cold snap after planting, the seeds will remain dormant. You may need to wait until it gets warmer to replant or place plastic sheeting over the beds to warm soil before sowing.
C. TOO DRY	If the seeds have not received enough water they will not germinate. Be sure to water every day. If you have been watering regularly it is possible that your soil is too sandy and the water is leaching past your seed before it has a chance to use it. Check your soil.
D. TOO WET	If your seeds become too wet they will rot. This can be caused by over watering or by clay soil. Clay soil retains too much water and can create a pool around your seed. Check your soil and be sure to water once a day.
E. SEEDS ARE NOT VIABLE	Infertile seeds can be caused by expiry or by improper storage. Be sure to plant your seeds promptly and store them in a cool, dark room prior to planting.

PROBLEM 2: YOUNG SEEDLINGS WILT AND DIE

A. DRY SOIL	New plants need regular water to grow big and strong. Make sure you are watering your garden evenly and regularly. Water in the morning or evening during summer.
B. ROTTING ROOTS AND STEMS	Avoid overwatering. Add compost to your soil to assist with nutrient contents and proper water drainage.

POSSIBLE REASON:	SOLUTION
C. FERTILISER BURN	It is possible to over fertilise your plants. Make sure to mix the fertiliser into the soil properly and avoid direct contact with plants.
D. PESTS AND DISEASES	Check the surrounding areas and soil for pests and apply pest control measures. Check your plants for brown or yellowing spots. If you discover signs of disease, remove the affected plants and burn them. DO NOT add them to your compost heap.

PROBLEM 3: PLANTS ARE WEAK AND SPINDLY

A. NOT ENOUGH LIGHT	Your plants need 5 to 8 hours of sunlight each day. If necessary remove the cause of shade or move the plants to a sunnier area.
B. TOO MUCH WATER	Improve drainage by adding compost.
C. PLANTS ARE CROWDED	Have you planted your Reel Gardening Seed Strips at least 1 hands length apart? Have you thinned out your seedlings? Remember to transplant out spinach, beetroot, onions and tomatoes and thin out carrots with multiple germinations at one seed site to prevent over-crowding plants.
D. TOO MUCH NITROGEN	This can be caused by over fertilising. Too much nitrogen results in excess foliage production. This means your plants will have lots of leaves but an undeveloped root system, causing the plant to be large but weak. Too much nitrogen may also cause the soil to become too acidic. Acidic soil makes harmful material available to plants, causing them to be weak and spindly.

PROBLEM 4: PLANTS GROW VERY SLOWLY AND ARE LIGHT GREEN OR SLIGHTLY YELLOW

A. INSUFFICIENT LIGHT	Thin out plants and ensure garden is receiving enough sunlight.
B. TOO COLD	If you experience a drop in temperatures after your plants have germinated, they may start to grow very slowly. Protect them from the cold by covering them with an aerated plastic sheet or shade netting.
C. TOO MUCH WATER. POOR DRAINAGE.	Reduce watering. Improve drainage by adding organic matter to planting beds. Growing in raised beds helps with water drainage.

POSSIBLE REASON:	SOLUTION
D. SOIL NUTRIENT DEFICIENCY	Test soil for nutrient deficiency and add specific trace elements where necessary. If you don't have access to a soil test, add an even, organic "complete" fertiliser. Be careful to follow application instructions to avoid fertiliser burn. Even complete fertilisers contain nitrogen, phosphorus and potassium in an even ratio. Also add compost and aged manure to the garden regularly.
E. ACIDIC SOIL	A pH level below 7 indicates that your soil is acidic. Acidic soils are harmful for most plants as they reduce essential nutrient availability and microbial activity. A drop in pH can result in a large increase in soluble aluminium which retards root growth, further restricting access to water and nutrients. This means that plants can show deficiency symptoms despite adequate fertiliser application. To correct the pH apply agricultural lime at about 700grams per $10m^2$ of soil. Make sure to mix it into the top layer of soil very well. Don't apply lime and manure or compost at the same time. They will mix together and produce ammonia gas which is bad for you and your plants! If you don't have access to agricultural lime you can use wood ash, bone meal, crushed marble or crushed oyster shells. Be careful not to raise the pH too much as alkaline soil is also bad for your plants.
F. COMPACTED SOIL. NOT ENOUGH DRAINAGE	Compacted soil makes it hard for water and air to move easily through the soil and for plants to develop good strong roots. Compaction happens when the air pockets between the components of the soil collapse. This can happen from walking over the soil too much or if the soil doesn't contain enough organic matter. To improve the soil, loosen the ground around plants, making sure not to damage the roots. Add compost and any earthworms you find in the garden. Earthworms eat their way through compacted soil, leaving behind burrows and droppings that help to aerate and fertilize the ground.
G. INSECTS OR DISEASE	Search the plants and surrounding areas for pests. Apply pest control methods. If disease is discovered, remove affected plants and burn them.

PROBLEM 5: STEMS AND LEAVES HAVE DARK OR BROWN SPOTS

A. FERTILISER OR CHEMICAL BURN	This occurs when fertiliser is placed or wind blown directly onto the plant or too much fertiliser is added to the soil. Make sure to apply the fertiliser directly to the soil. If you have applied too much fertiliser, flush it out through watering.

PROBLEM 6: LEAVES CURLED, PUCKERED, OR DISTORTED

A. MOISTURE IMBALANCE	Keep soil evenly moist; avoid over-watering. Mulch to conserve soil moisture.

POSSIBLE REASON:	SOLUTION
B. APHIDS	Aphids are sap sucking insects that will remove the moisture from leaves, causing them to wilt. Control aphids by spraying them off with a hose and apply home-made pesticide. Aphids also spread viruses that may cause leaves to pucker and curl. Control aphids and remove and burn diseased plants.
C. WEED-KILLER DAMAGE	It is best to control weeds by hand but if you must apply a weed killer, make sure that the wind is not blowing to control application and do not use in the middle of the day.

PROBLEM 7: POWDERY WHITE COATING ON SURFACE OF LEAVES, STEMS, AND FLOWERS

A. POWDERY MILDEW	Powdery Mildew is a fungal disease that occurs due to dampness and humidity in the air, crowded plants and poor air circulation. If left untreated the mildew will weaken the plant and eventually cause leaves to fall off. Mildew spreads between plants very easily. To treat it you will need to spray with a home-made Milk Spray. Mix 1 cup cows milk, 5 cups of water and a squeeze of dishwashing liquid. Spray infected plants twice a week after watering.

PROBLEM 8: BLOSSOM ENDS OF TOMATOES, BUTTERNUT AND PEPPERS ROT

A. DRY WEATHER FOLLOWING A WET SPELL. UNEVEN IRRIGATION.	Mulch to even out soil moisture. Water evenly.
B. CALCIUM DEFICIENCY	Add agricultural lime to the soil. See problem 4.
C. ROOT DAMAGE DURING PLANT CULTIVATION	When caring for your plants and digging in the soil, be careful not to damage the roots. Injured roots disrupts water and nutrient uptake by the plant.

PROBLEM 9: PLANTS DO NOT PRODUCE FRUIT

A. TOO MUCH NITROGEN	Too much nitrogen in the soil will cause the plants to produce lots of leaves but no fruit. Avoid using nitrogen rich fertilisers and do not plant any nitrogen fixing plants close to your fruiting plants.

HARVESTING

Root vegetables, leafy vegetables and fruit-producing vegetables all show different signs when they are ready for harvesting. Some vegetables have fruit that turn a specific colour, some plants reach a certain size and some start poking out of the soil.

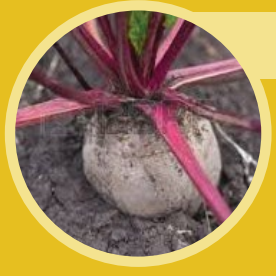
HERE ARE SOME SIGNS THAT LET YOU KNOW YOUR HARD WORK HAS PAID OFF AND YOUR VEGETABLES ARE READY TO EAT:

SPINACH

When your spinach has reached a size you are happy with, cut off the 3 biggest outer leaves with a sharp knife or scissors. Leave the rest of the plant to grow. Harvesting like this will prevent the plant from going to seed and will allow you to harvest from a single plant for up to 18 months.

LETTUCE

When your lettuce plant has reached a size you are happy with, start harvesting the outside leaves with a sharp knife or scissors and leave the centre bud to continue to produce new leaves. You can also cut the whole plant off at the base. Lettuce is ready to eat at any size.



BEETROOT

When the beetroot top starts to emerge out of the soil it is ready to harvest. Check the size by pushing your finger into the ground and moving it around the root. Loosen the soil before pulling the beetroot out. In very wet weather remove the beetroot from the soil before the root start to rot.

BEANS

Beans can be harvested green and eaten fresh or they can be left to dry on the plant and used as dry beans. The more you harvest of the green beans, the more the plant will produce, so harvest fresh for a larger crop. Be careful to protect the tender plant when harvesting.

CABBAGE

When your cabbage heads are a good size, squeeze them. They are ready to harvest when they feel firm all the way through the head. Use a sharp knife to cut them off under the head, close to the ground. If you leave the roots in the ground another cabbage will grow next season.

CARROTS

Push your finger into the ground next to your carrot and move it around the circumference to determine the size. Try not expose the carrot to the air and sunlight before you're ready to harvest. When the carrot is the right size move it around and loosen the soil before pulling it out.

ONION

The leaves of the onion plant will fall over at the neck of the onion, close to the soil. This signals that the onion has stopped growing. Harvest by moving the onion around to loosen the soil and pull out. If unexpected wet weather settles in remove onions before the leaves have flopped to prevent rotting in the soil.

GREEN PEPPER

Green Peppers will turn yellow and then red if you leave them on the plant. Harvest when they have reached the shade you want. For green peppers, simply wait until the fruit has reached the desired size. Harvest by cutting the stem 1cm from the pepper with scissors or a knife. The more you pick, the more will grow.

TOMATO

Leave tomatoes to ripen on the plant. When they turn red they are ready to eat. Watch for pest damage once the tomatoes start to ripen. If pests become a problem, harvest the tomatoes just as they begin to change from green to red and let them ripen indoors on a sunny windowsill.

SQUASH

Gem squash, butternut and pumpkin are ready to harvest when the skin is too hard to pierce with your fingernail. Cut the fruit from the vine with a sharp knife, leaving 5cm of the stalk attached to the squash. With the stalk still attached, leave in a cold dark room for a week for the skin to harden if you intend to store it for a few weeks.

PEAS

Once pea pods swell they are ready for harvesting. However you can harvest a few immature peas to stimulate growth. Gently rub the pods between your hands to feel the size of the peas. From then on harvest twice a week to stimulate growth.

BROCCOLI

Harvest broccoli before florets open and start to turn yellow. Cut just below the point where the stems begin to separate. Once you've harvested the main head, tender side shoots will form in the leaf axils all along the lower stalk. As long as you keep harvesting these, the broccoli will continue to produce.

SEED SAVING

Knowing how to save seed is the first step towards establishing a sustainable garden. Reel Gardening contains completely natural, open polinated seed. This means that, unlike genetically modified seeds, you can save the seeds from the vegetables you grow with Reel Gardening Seed Tape, store them, replant them and produce another flourishing garden.

WHERE DO SEEDS COME FROM?

VEGETABLES PRODUCE SEED FROM EITHER THEIR **FRUIT** OR THEIR **FLOWERS**

FRUITS

BUTTERNUT
GEM SQUASH
TOMATO
GREEN PEPPER
BEANS
PEAS
CHILLI

FLOWERS

BEETROOT
SPINACH
LETTUCE
CARROT
ONION
CABBAGE

HOW TO SAVE SEEDS

WHEN SAVING SEEDS FROM FRUITS YOU SIMPLY NEED TO CHOOSE THE HEALTHIEST, STRONGEST, MOST DELICIOUS-LOOKING VEGETABLE AND EXTRACT THE SEEDS FROM INSIDE. SLICE OPEN THE VEGETABLE AND GENTLY REMOVE THE SEEDS BEFORE COOKING.

When saving seeds from flowers, the process is a little bit more complicated. Select the strongest, healthiest plant and DO NOT harvest from it. By not harvesting you will encourage the plant to go to flower. It will send up a long stem from the centre of the plant.

You need to select the best looking vegetable to extract seed from because it carries good strong genes and characteristics that you want to reproduce in your next crop.

CARROT ONION

SPINACH + BEETROOT CABBAGE

SEED STORAGE

When harvesting seed from fruit you will need to run the seeds under a tap to wash away the surrounding pulp. Place the seeds on a paper towel and store in a cool dry place until dry. Do not expose seeds to direct sunlight. You will know the seeds are dry and ready for storage when they can slide across a piece of paper or a plate without sticking to the surface or to each other. It is important that the seeds are completely dry before storage or they will rot.

ALWAYS STORE YOUR SEEDS IN A COOL DRY PLACE THAT DOES NOT GET ANY SUNLIGHT. IT IS BEST TO SAVE YOUR SEEDS IN ENVELOPES OR FOLDED PAPER. DO NOT STORE IN PLASTIC PACKETS OR CONTAINERS AS THESE WILL SWEAT AND COMPROMISE THE SEEDS.

MONTHLY ACTIVITIES

MONTH 1

WATERING

- Water daily in the morning or afternoon. In summer water in the afternoon. In winter, autumn and spring water in the morning.
- If it is very hot, water in the morning and again in the afternoon.

PROTECTION

- When you water each day check for PESTS under the leaves and around the seedlings. Use suggested methods to get rid of them.
- Are any local animals destroying the crops? Identify the threats and fence the area. You can also find thorny branches, and shade netting to protect the seedlings.

SOIL CARE

- Start gathering material for your compost heap right away.
- Try to build a compost heap every month to ensure a regular supply of wonderful compost.

STAGGERED PLANTING

- It is important to divide your garden into quarters and plant out one quarter each month. This way, by the time you have planted out the 4th quarter, the 1st will be ready to harvest from. This practice ensures a continuous harvest from the garden. Be sure to plant out your first quarter this month.

MONTH 2

WATERING

- As plants grow bigger and stronger, you can reduce watering to once every second day, except when it's very hot.

PROTECTION

- Continue checking for pests.
- Look out for weeds. Pull the large ones out to use in your home-made fertiliser.

SOIL CARE

- Now that your plants have grown enough, ensure a good layer of mulch surrounds each of your seedlings to save water and add nutrients to your soil.
- Start your second compost heap.
- Make your home-made fertiliser from weeds and grass cuttings, manure or other material you can find. Apply this once during the month, paying particular attention to the heavy feeders.

STAGGERED PLANTING

- Prepare and plant out the second quarter of land as you did with the first. Prepare the soil by adding compost and fertiliser, dig out your beds and take into account companion planting and crop rotation.

SPECIFIC CARE

- You might need to TRANSPLANT some seedlings. If there is more than one PLANT growing out of each seed site, transplant the stronger one to a suitable location in the garden. Be sure to protect the roots from sunlight and put back into the soil as soon as possible. Weeding and transplanting will ensure good airflow through the garden to prevent the spread of disease.
- Carrots are the only plants that cannot be transplanted. Thin them out by removing the smaller weaker carrot plants, and add to your compost heap.
- Start trellessing beans, peas, tomatoes, butternut and gem squash.

MONTH 3

WATERING

- Water every second day, except when its very hot.

PROTECTION

- Continue checking for pests.
- Look out for weeds. Pull the large ones out to use in your home-made fertiliser.

SOIL CARE

- Ensure that your layer of mulch is replenished each week.
- Your first Compost heap might be ready by now. Compost should resemble dark soil in smell and texture. Dig the compost into your new beds, put a layer of compost under your mulch in older beds, or make compost tea to feed your plants.
- Start an additional compost heap to ensure a regular supply.
- Apply your home-made fertiliser once during the month to your vegetables, paying particular attention to the heavy feeders.

SPECIFIC CARE

- Weeding and transplanting will ensure good airflow through the garden to prevent the spread of disease.
- Continue to trellis beans, tomatoes, peas, butternut and gem squash this month.
- Have you decided which plants you will collect seed from? Make sure everyone who works in the garden knows which plants they are and do not harvest from the spinach, beetroot, cabbage, lettuce, rocket, broccoli and relevant herbs so that they will go to seed. Save the best looking, large, unblemished tomato, gem squash, green pepper or butternut to remove seeds from the centre.

HARVEST

- Some of the vegetables you planted in month 1 will be ready to harvest, particularly your spinach. Start by cutting the 3 large outside leaves off each plant.

STAGGERED PLANTING

- Prepare and plant out a new quarter of land this month as you did with the first.

MONTH 4

WATERING

- Water every second day, except when its very hot.

PROTECTION

- Continue checking for pests.
- Look out for weeds. Pull the large ones out to use in your home-made fertiliser and mulch over the smaller ones.

SOIL CARE

- Ensure that your layer of mulch is replenished each week.
- Dig the compost into your new beds, put a layer of compost under your mulch in older beds, or make compost tea to feed your plants.
- Start an additional compost heap to ensure a regular supply.

SPECIFIC CARE

- Remember not to harvest from the plants you've chosen to go to seed.

HARVEST

- Most vegetables from your first quarter should be ready to harvest. Remember that the more beans, tomatoes, peas, butternut, gem squash, green pepper and chilli you pick, the more will grow.

STAGGERED PLANTING

- Prepare and plant out a new quarter of land this month as you did with the first.

GARDEN AS AN OUTDOOR CLASSROOM

LEARN AND GROW TOGETHER!

STEP 1
PLANNING THE GARDEN

When designing your garden make sure that it is as easy to interact with as possible. Draw up a garden plan before you start building your garden. Consider designated beds for each class, wide path ways for observation, narrow beds that are easy for children to reach into, communal open spaces with grass or benches where you can hold lessons and a compost area.

STEP 2
ADDING GARDEN SIGNS

As an arts and crafts project the children can design garden signs. These signs help the children take ownership of the garden at the same time as displaying important information. These signs can depict garden sayings and garden rules such as “stay on the paths” or “Bee the best you can be”

STEP 3
PLANNING THE SCHEDULE

In order to ensure that all classes are able to use the garden, make plans with the principal and teachers to create a garden schedule. This will indicate when each class is permitted to use the garden and what aspect of garden care and maintenance they are responsible for. Ensure that everyone is aware of the garden and how they can include it into their syllabus’. The garden is a useful tool in Life Sciences, Natural Sciences, Mathematics and Arts and Culture.

STEP 4
A GARDEN JOURNAL

In order to maximise learning, encourage each student to start a garden journal. This journal should begin with planting and document all stages of growth, in writing and drawing. Together with observation of plant growth, the journal can also be used to describe insects found in the garden, the impact of pests or diseases, the outcomes of experiments and finally any recipes that mom and dad use when cooking with the vegetables grown.

STEP 5
WORKING IN THE GARDEN

Encouraging the children to get involved in the day-to-day care of the garden through regular weeding, watering and pest control increases their respect for the energy and the labour that goes into producing the food they eat every day.

NUTRITION

TOMATOES

CONTAIN HIGH LEVELS OF **ANTIOXIDANTS** AND ARE A GOOD SOURCE OF **VITAMIN C AND E**

Antioxidants and Vitamin E keep your body in a healthy balance while Vitamin C boosts your immune system and protects you from diseases.

BEETROOT

BOTH THE LEAVES AND ROOTS OF BEETROOT ARE EDIBLE. THE ROOTS ARE HIGH IN **VITAMIN C** AND THE LEAVES ARE HIGH IN **VITAMIN A**

Vitamin C boosts your immune system to stop you getting sick, Vitamin A is good for your eyes and keeps your heart, lungs and kidneys working properly.

GREEN PEPPER

THE LONGER THE PEPPERS STAY ON THE PLANT AND TURN FROM GREEN TO YELLOW TO RED, THE HIGHER THE **VITAMIN C** CONTENT

Vitamin C protects you from colds and flu.

BEANS

BEANS ARE HIGH IN **VITAMIN A, B, C AND K** AND PROVIDE YOU WITH **CALCIUM, POTASSIUM AND IRON**

Vitamin A is good for your eyes, Vitamin B keeps your heart strong, Vitamin C protects you from diseases and Vitamin K is important for blood clotting and strengthens your bones.

LETTUCE

LETTUCE IS HIGH IN VITAMIN B, IRON AND POTASSIUM **AND IS A GOOD SOURCE OF** VITAMIN A, C AND K

Vitamin B and Potassium keep your heart strong while Iron is important for healthy red blood cells.

PEAS

PEAS ARE A GOOD SOURCE OF **VITAMIN A, C AND K** AND PROVIDE YOU WITH **IRON**

Vitamin A is good for your eyes, Vitamin C protects you from diseases, Vitamin K strengthens your bones.

SPINACH

SPINACH GIVES VITAMIN A AND C TO THE BODY AND IS HIGH IN IRON AND POTASSIUM

Vitamin A is good for your eyes, Vitamin C boosts your immune system, Iron helps your red blood cells transport oxygen around the body, and Potassium keeps your heart strong.

SQUASH

SQUASH IS A GOOD SOURCE OF VITAMIN A, C, E AND POTASSIUM AS WELL AS CALCIUM AND MAGNESIUM

Vitamin A is good for your eyes, Vitamin C prevents colds and flu. Vitamin E is good for healthy skin and a strong immune system, Potassium keeps your heart strong and Calcium and Magnesium strengthen your bones.

CARROTS

CARROTS ARE A GOOD SOURCE OF VITAMIN A, C, K AND POTASSIUM AND PROVIDE YOU WITH CALCIUM AND VITAMIN B

Vitamin A is good for your eyes, heart, kidneys and lungs, Vitamin C stops you from getting sick, Vitamin K strengthens your bones, prevents heart disease and helps with blood clotting and Potassium keeps your heart strong.

BROCCOLI

BROCCOLI CONTAINS HIGH LEVELS OF VITAMIN A, POTASSIUM AND IRON

Vitamin A is good for your organs, Potassium keeps your heart strong and Iron keeps your immune system strong and helps make strong red blood cells.

CABBAGE

CABBAGE IS A GOOD SOURCE OF VITAMIN B, C AND K AND GIVES CALCIUM, IRON AND MAGNESIUM TO YOUR BODY.

Vitamin B keeps your heart strong, Vitamin K, Calcium and Magnesium strengthen your bones and Iron keeps your immune system strong.

NOTES

LET'S GET GARDENING!

Reel Life

Reel Life is an Not for Profit Company aligned to Reel Gardening. It focuses on the implementation of sustainable community garden projects utilising the Reel Gardening technology. Reel Life offers an holistic solution to community development needs with regard to food security, that includes, but is not limited to, vegetable gardening. Other offerings include assets based project planning, sustainable livelihoods analysis, small business training, chicken farming, preserving and storage of vegetables and health and nutrition from the vegetable garden. Reel Life is able to act in a 'project management' role, bringing together various stakeholders to provide a complete monitored solution. Reel Life combines business skills with content on vegetable gardening, to enable small enterprises to be formed. **See our contact details below.**

For any questions or advice please contact Reel Gardening on 011 782 0661 or email info@reelgardening.co.za

Reel GARDENING
THE PLANTING REVOLUTION