

# GROW HAPPY® WITH LASAGNA LAYERING



Begin to gather your materials such as cardboard or newspaper and store them in a dry available space until ready to use. Make sure to remove all the staples and tape from the cardboard. If using newspapers, make sure it is black and white only as coloured ink can be detrimental to the soil and crops.



Find an area in your backyard and measure out the size you want your garden to be (remember it is always easy to add on!). Place 2-3 layers of your newspaper or cardboard directly onto the earth and water it generously to aid in beginning the decomposition process.



Start with adding your first green layer onto the wet cardboard, using manure or compost is a great first layer as it will further push the breaking down of material. Green materials are wet and rich in nitrogen, meaning they aid in the heating up of materials, which results in decomposition. Other green materials that can be used are vegetable and fruit scraps, fresh grass clippings, green leaves, coffee grounds, and tea bags.



After adding your green layer it is time to add a brown layer. Your brown layers should be at least double the amount as the green layers or it will become too moist. The brown layers are vital as they provide carbon to your garden. Carbon gives the compost energy to sustain the lasagna garden. Examples of brown layers include dried leaves, dried grass, eggshells, pine needles, shrubs, untreated wood shavings and bark.







Build up alternate layers with the green and brown materials, then top with mulch. It is important to top with mulch as it provides the soil with nutrients and helps the soil to retain needed moisture. This aids with the decomposition and promotes the growth of healthy crops.



It is essential to provide your garden with 1 to 2 water sources. For example, a rain barrel or soaker hose are effective resources.

If using a soaker hose, place underneath the top layer of mulch down the rows where you will be planting your seeds. Alternative water sources could be an underground water system, natural rainfall, an above-ground well, or a simple bucket and spout.



You can now plant your seeds right away! However, waiting 6 to 12 months will dramatically increase the development of your crop yield.



Dig holes in your garden and plant your seeds as directed on the package. Remember to mark where you planted your seeds to avoid stepping on them! If you choose, you can install stepping stones or wood steps in between the rows to easily access your crops.

## NOTES:

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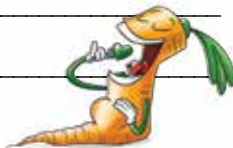
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## LASAGNA GARDEN MATERIALS

## BROWN MATERIALS (CARBON)

- Dry leaves/grass
- Straw and Hay
- Shrubs
- Pine needles/cones
- Tree bark
- Chopped up twigs/branches
- Newspaper (black and white only)
- Cardboard (remove staples and tape)
- Paper Towel
- Eggshells
- Untreated wood shavings
- Dryer lint
- Shredded paper

## GREEN MATERIALS (NITROGEN)

- Vegetable scraps
- Fruit scraps
- Grass clippings
- Green leaves
- compost
- Pine needles
- Tree leaves
- Flowers
- Hedge clippings
- Coffee grounds/filter
- Tea leaves/bags
- Animal manure from herbivores

## NOTES



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# CARDBOARD



Gather all your cardboard. For example, broken-down boxes work great for gardening. Be sure to remove any tape, staples, and avoid heavily inked or colour print cardboard. This is crucial because the cardboard will provide moisture and nutrients for your plants.



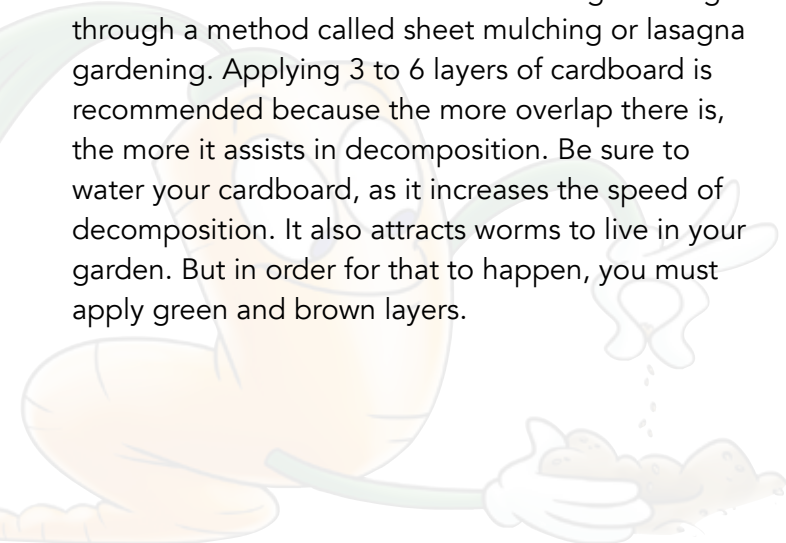
Lay your recycled cardboard on the ground where you wish to grow your garden! Remember to choose a location that you can access because once the garden is created, the grass underneath the cardboard will die. Despite this, the process aids the process in making your garden bed.



The most common use of cardboard in gardening is through a method called sheet mulching or lasagna gardening. Applying 3 to 6 layers of cardboard is recommended because the more overlap there is, the more it assists in decomposition. Be sure to water your cardboard, as it increases the speed of decomposition. It also attracts worms to live in your garden. But in order for that to happen, you must apply green and brown layers.



To begin the process, add compost, manure or organic materials such as a green layer over the cardboard. Green materials are high in nitrogen, while brown layers give the necessary carbon for plant growth. Both components work together to provide nutrients while keeping an accurate temperature that sustains plant growth and controls the moisture.



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# COMPOST



Start with 2-3 plastic bins directly onto the earth, the first one is for adding the initial compost materials, the second is for the decomposing batch, and the third is full of enriched soil of already decomposed compost ready for your garden. Add holes approximately 8"-10" apart from each other all over the bins, this helps the materials to properly decompose.



First, add a layer of green materials as in your vegetable and food scraps, then alternatively layer with brown materials to begin the decomposition process. Aim for at least double the amount of brown materials than green as it will help with the heating up of the materials. The brown materials are dry and carbon rich, while the green materials are wet and nitrogen rich, making the perfect recipe for decomposition. Mist with water as you build layers to help with the breaking down of materials.



The compost now has to "cook" for 3-12 months with the lid on to keep the heat and moisture inside, throughout this process it may be beneficial to give your compost a mix and some water if it has become too dry, or transfer it to the next bin to get the aeration process going again.



When you open up your compost and see rich dark dirt inside, then it is ready to use in your garden! Make sure to mix around and see if there are any materials still not decomposed, if so, then you may want to put the lid back on and continue decomposing. This soil is gold for your garden as it is jam-packed with all the important nutrients your garden needs to flourish.



# COMPOST ALTERNATE



Composting in a hole in the ground is also an option! All you need to do differently is dig a hole in the ground depending on the size of compost you want (at least 10 inches deep to avoid tracking animals). Try to keep any food scraps near the bottom to avoid attracting animals. Since the materials are already in the ground, you do not need to transfer it, simply dig it up when you are ready to utilise the new nutrient enriched soil!

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## NOTES



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# MULCH



Measure out space for your ideal garden. This process includes deciding what kind of garden you wish to build, and the plants sustained in it. For example, you may want to create an in-ground garden, raised bed garden, or container garden. By choosing a type of garden you want to build, you can prepare a material list such as specific mulch, soil, plants, seeds, building methods or frames.



Buy or create your mulch. Mulch can be an essential piece to your garden as it not only gives nutrients to your soil, but it protects your plant's roots, controls the temperature of the soil, and retains water.



Mulch your materials. Organic mulch can include wood chips, pine needles, grass clippings, shredded bark, leaves, newspaper, seaweed, and straw. If you're a frequent gardener or have yard waste, save the materials for composting within step 4.



Since mulch is an organic material; it breaks down over time. Therefore, to keep your garden strong and healthy, you can add a layer of compost. Adding compost, such as eggshells, coffee, tea bags, or plant clippings can refresh your mulch layer. It is important to note that once you add compost, you should add another layer of mulch such as wood chips, to cover the compost. As a result, it protects the layers.



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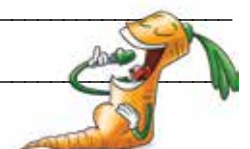
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## NOTES

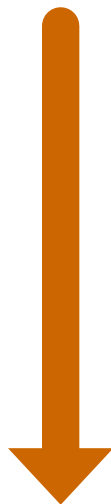






## INTRODUCING **CARBON & NITROGEN**

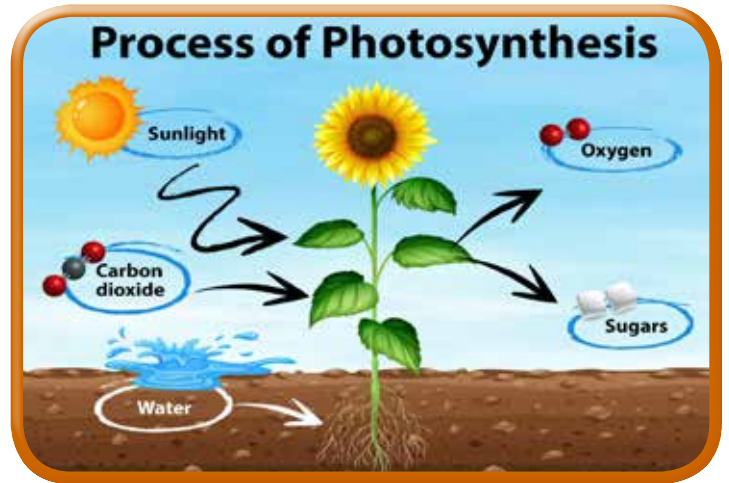
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# CARBON



Carbon is a very important element in gardening as it provides the soil and crops with the nourishment and energy needed to grow in an effective and healthy way.



Plants use carbon through a process called photosynthesis, which is when the plant takes in carbon dioxide from the air, hydrogen from water, and uses energy from the sun to produce glucose and oxygen. The plant releases the oxygen back into the air and stores the glucose as a source of energy.



Without carbon, the plant would be unable to complete the photosynthesis process, meaning no glucose would be created to feed the plant and soil, which would result in your plant or garden dying.



To make sure that your soil and plants are getting enough carbon, it is important to add extra carbon sources to your garden by adding brown materials. Some examples of brown materials are dry leaves and grass, straw/hay, newspaper, and chopped up twigs/branches.

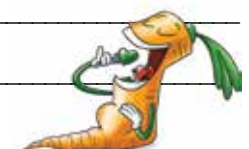
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Adding brown materials within your garden can be done by using a process called lasagna gardening. This process consists of layering alternate layers of brown and green materials to decompose and produce nutrient-packed soil for your plants.



You can also add brown materials on top of your garden by using materials such as an organic mulch. Mulch can be made from materials such as wood chips, compost, leaves and grass, straw, or bark. As the mulch decomposes, the carbon improves the soil and plant growth. This can be done before or after planting, just make sure to leave room in between the mulch and stems to avoid drying out the plant.

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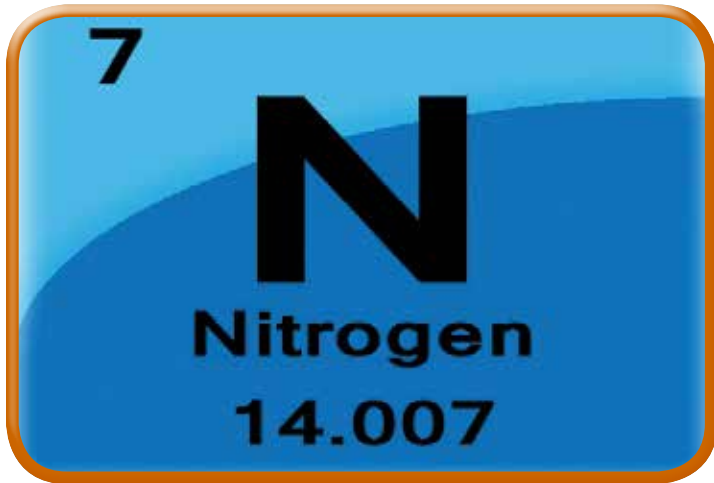
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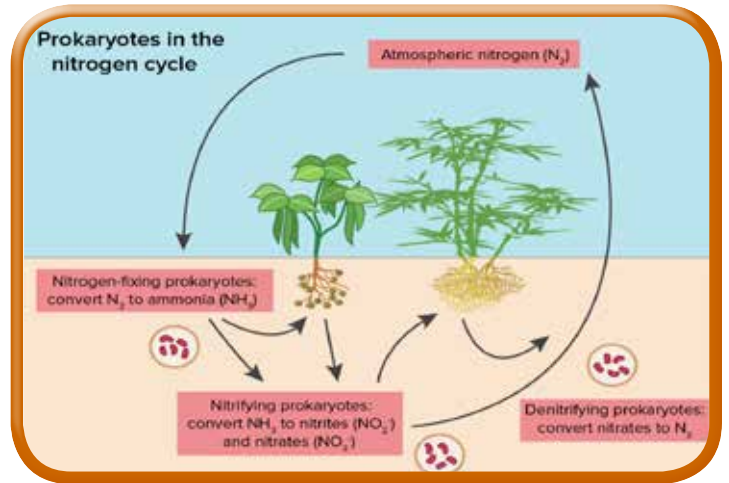
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# NITROGEN



Nitrogen is the most important nutrient in a plant's life as it provides food and energy for the plant to grow. It is also the most abundant element in our atmosphere, but plants cannot use it in this state.



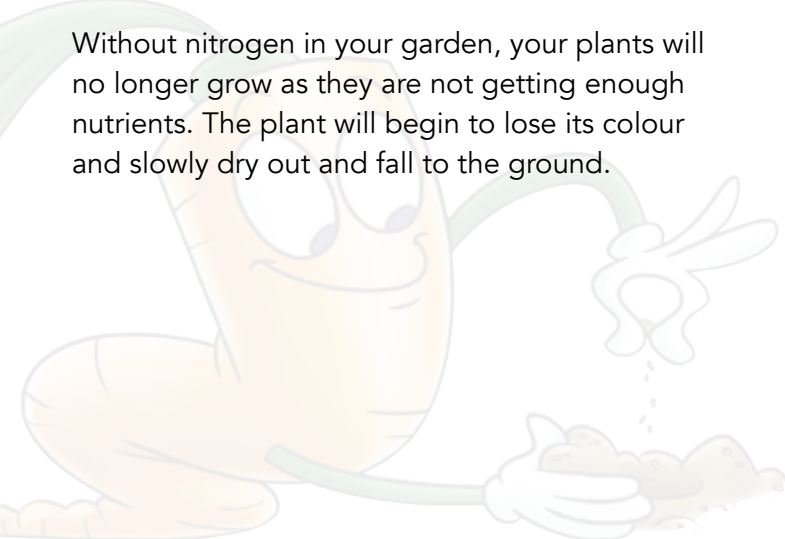
In a brief explanation, nitrogen is used in plants when the bacteria in the soil changes the state of the nitrogen to ammonium, and then the ammonium into nitrates. The plants can then absorb the nitrates and use them in other elements, which creates proteins that plants need to live. This process is a portion of the nitrogen cycle.



Without nitrogen in your garden, your plants will no longer grow as they are not getting enough nutrients. The plant will begin to lose its colour and slowly dry out and fall to the ground.



To make sure that your plants are getting enough nitrogen, it is important to add extra nitrogen sources to your garden by adding green materials and/or nitrogen fixers. Some examples of green materials are vegetable and fruit scraps, fresh grass clippings and leaves, compost, coffee grounds, manure, and hedge clippings.







Adding green materials to your garden can be done by using lasagna gardening, which consists of layering alternate layers of green and brown materials to decompose and produce nutrient-packed soil to plant your crops in. Or you can simply put green materials on top of your garden to decompose.



You can also add nitrogen by using nitrogen fixers in your garden. Nitrogen fixers can be used in two ways, the first being a cover crop, which is when you plant the nitrogen fixer all over your garden to prepare the soil before you plant your intended garden. The other route you can take is planting the nitrogen fixers around your garden after your initial crop so they can continuously be pulling in nitrogen for your growing garden. Examples of nitrogen fixers are such as clover, cowpea, alfalfa, buckwheat, and lupine.

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# ADDITIONAL WATER SOURCES



Utilize recycled plastic water bottles to collect a source of water for backyard gardening! You will need two water bottles, an Exacto knife, string, and a hot glue gun.

The first step is to cut the top portion of the first water bottle and attach it to your second water bottle's lid with the hot glue gun. This prevents the water from escaping! Next, flip the collector upside down and cut a hole in the bottom of the main water bottle. Tie your string, or you can use wire, tightly around the water bottle rain collector and tie it where you notice heavy rainfall in your backyard. This technique is perfectly suited for smaller gardens and plants.



For more extensive gardens, you can use a rain barrel! Rain barrels are a great sustainable resource. For example, you can use any plastic container or barrel to collect rainwater. The barrel size and gallon ratio can also be adapted to your needs. Place your rain barrel underneath a downspout. Or you can install a tarp and angle it towards your rain barrel to collect water. Lastly, your rain barrel requires a solid base to access the water easily. Have fun growing your garden!

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