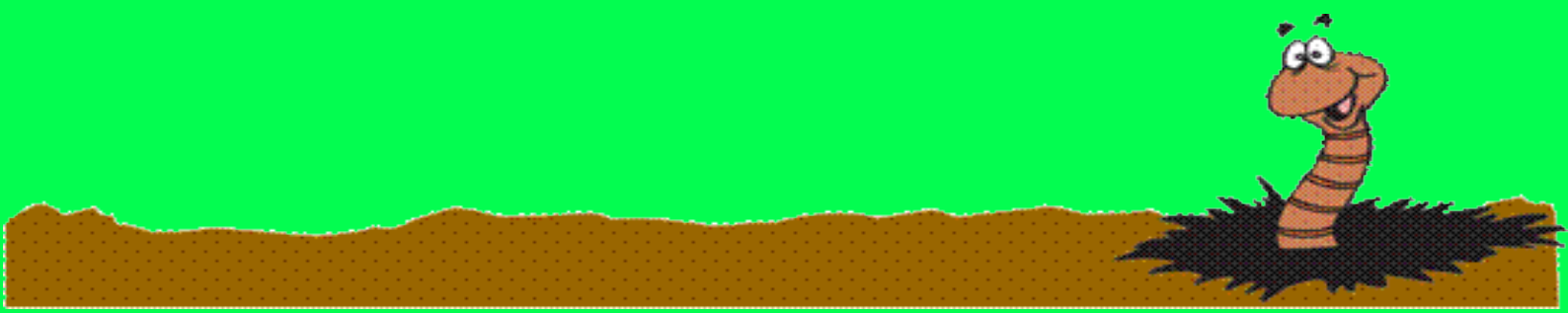
COMPOST AND WORM FARMS

Contents



WHAT IS COMPOST?

Compost? Compost is a way of getting good quality soil in an eco-friendly way, no need for fertilisers. To get good compost you need to understand the process of decomposition, this booklet will tell you all about it.

In compost you need to have a good balance of nitrogen and carbon. Carbon is all the dead things like dead leaves and sticks, but if you have too much carbon your compost will be too dry. Nitrogen is all the living things or still moist so these are things like food scraps, but if you have too much nitrogen your compost will be too sloppy.

WHAT ARE THE COMMON PRLOBLEMS

Some of the most common problems in compost heaps can be fixed easily. Here are some of these problems and how to solve them.

TO MUCH NITROGEN

Add more carbon.

TOO MUCH CARBON

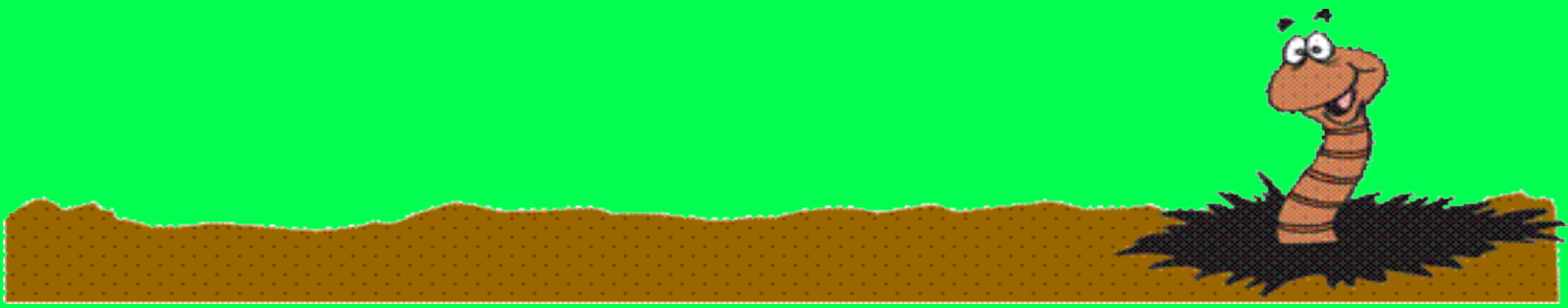
Add more nitrogen.

TOO MANY BUGS

Don't worry they are helping the process

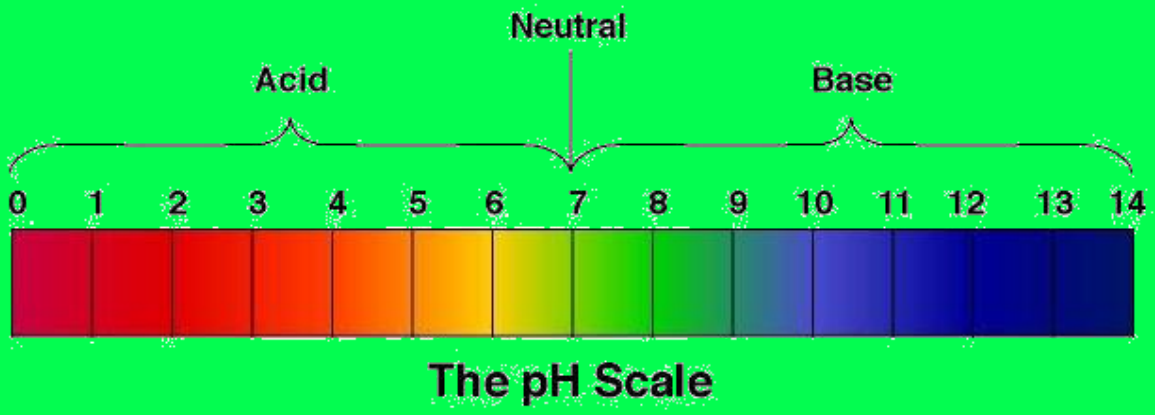
PLANTS ARE GROWING

Pull them out if you don't want them or transplant them to your garden if you want to keep them.



What is pH?

pH is a scale used to measure the acidity of substances in a number scale of 0 to 14.

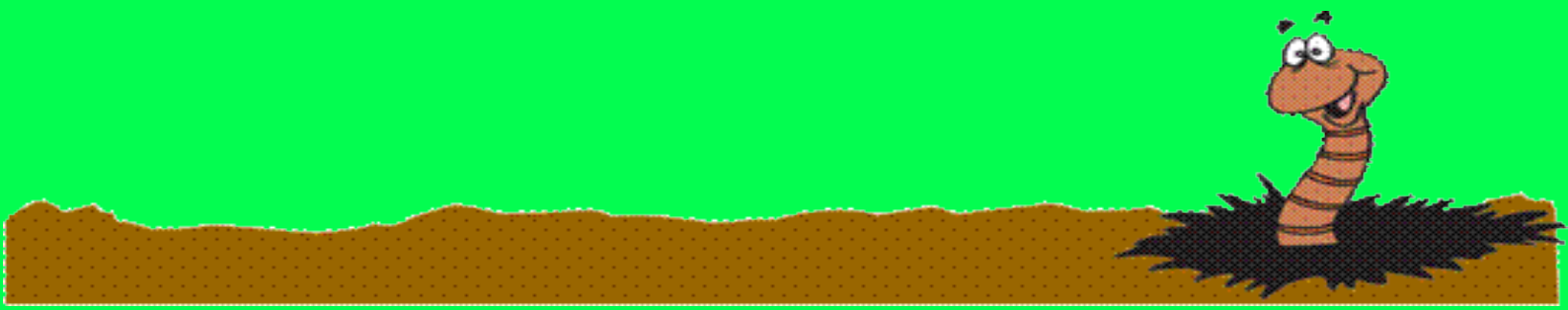


The pH Scale

7 in the pH scale is neutral meaning that any substance with the pH of 7.0 has an equal amount of acid and base or none at all, for example water. Any substance with a pH number below 7 has more acid and the lower the number the more acidic the substance. For example battery acid has a pH of 1.0 and cola has a pH of 2.5. Numbers above 7 have a higher base. Things like this are sea water (8.0) and bleach (12.4).

pH In Compost

The pH levels in compost vary during the decomposition cycle. During the first stages of the cycle the pH levels are around about 5.5 and 8.0. Around this stage organic acids are formed making the pH levels rise and also making the environment suitable for fungi to grow and cells to break down. As the process continues the acids gradually neutralize. The pH of mature compost is around 6 to 8.



MICROORGANISMS

The main types of microorganisms are bacteria, fungi, protozoa and actinomycetes. The bacteria that break down the substances in the compost pile are psychrophiles, mesophiles and thermophiles. Psychrophiles are slow working bacteria that like cooler temperatures around 13 C but can work in temperatures up to 40 C, these are the bacteria that work at decomposing throughout the winter. These bacteria do not work fast but as the days start to get warmer the compost heap starts to get warmer as well, that is because the psychrophiles have carried on working. But when the days get to hot their job will be taken over by the mesophiles.

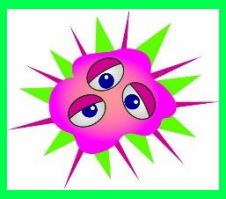
Mesophiles like moderate temperatures around 20 C to 35 C. These bacteria work great alongside the macroorganisims. Mesophiles break down organic matter into carbohydrates and proteins which break down further.

Thermophiles are bacteria that like lots of oxygen and work really fast for short periods of time of about three to four days. The reason for this is because when the conditions of the compost do not change the thermophiles stop working. These bacteria like the compost pile at temperatures around 40 C to 70 C.

Fungi are single or multi celled plants, they do not have seeds though, they have spores. Fungi cannot photosynthesise like normal plants they have to find their own carbohydrates, they do this by breaking down other forms of organic matter. By doing that they produce carbon dioxide.

Actinomycetes are another type of microorganism they look like a spread of greyish fluff over the top of the compost heap. Actinomycetes create a special substance called humus which is not the dip made out of chick peas (hummus). Humus is a dark, fertile material in soil that is basically the finished product of compost.

Protozoa are a more complex version of bacteria, but they do not play are very big role in the decomposition process.



MACROORGANISMS 

Macroorganisms are organisms or living creature that unlike microorganisms you can see with a naked eye. These organisms play a part in the decomposition process that is not as big as the microorganisms but can still have a big impact on your bin. Some of the leading macroorganisms are:

THE EARTHWORM

The earthworm is one of the most important macroorganisms and is so useful that the worm farm was invented so that fertile soil could be harvested faster. Earthworms help process the dirt by digesting it through their bodies and it coming out the other end as fertile soil. Earthworms are invertebrates.

SNAILS AND SLUGS

Snails and slugs are molluscs, snails have shells and have a retractable foot. Slugs however have no shell and are more of a bullet shape. Snails and slugs feed on plant matter but have a bad reputation for eating people's gardens.

BEETLES

Beetles are winged insects that feed on fungus, vegetables and smaller animals like earthworms, slugs, snails and ants.

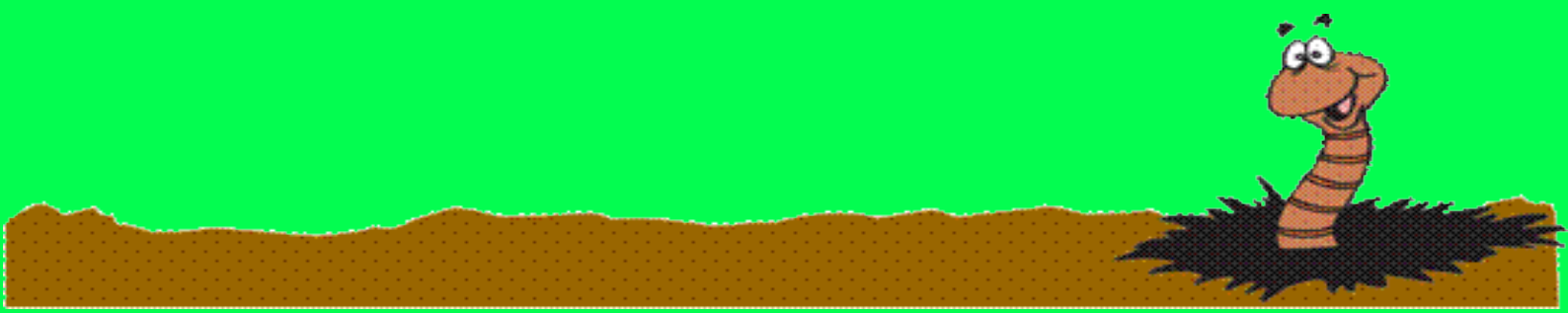
FLIES

Flies are insects that eat almost anything especially if it smells. They carry many germs, come in numbers and reproduce quickly. Hot temperatures kill fly larvae.

ANTS

Ants are small insects and eat quite a variety of items, they eat most food scraps and other insects. Ants live in colonies and help the decomposition cycle by moving the matter around.

These are the leading macroorganisms there are others that play similar roles in the decomposition cycle.



MAJOR MACROORGANISMS

DIFFERENT TYPES OF BINS

There are many different types of compost bins. All of them have their up sides and their down sides, they come in many different shapes and sizes, some are plastic and some are wood and all of them have slightly different purposes.

WORM FARMS

Worm Farms are a great way to get good quality soil and fertiliser which is worm juice (worm pee) you can also get worms from your farm to your garden. These are all great things about a worm farm. With worm farms although there are many great things about you also have to take the worms into account. Worms need easy things to process are very sensitive to acidic substances they also do not like heat, so you will have to be careful about the temperature of your bin. Now the question you are probably asking yourself is: What should I put in my worm farm?

YES

Most fruit and veggies
Cooked food
Fruit pulp
Tea bags/coffee grounds
Most paper and card board shredded or wet
Hair
Vacuum dust
Leaves and lawn clippings (not too much)
Dirt
Untreated sawdust/wood ash (not too much)

NO

Citrus or acidic substances
Plastic
Spicy food
Shiny paper
Fats/oils

WORM FARM

STANDARD COMPOST

There are many different types of bins like the tumbler. This bin is great because it does not make a mess and they do not take up that much room, they are perfect for small apartments.

There are many other types of bins most of them are designed for outside.There are bins with detachable fronts and bins with trapdoors this is so you can take the finished product out.

YES

Fruit and vegetable scraps

Coffee and tea

Egg shells

NO

Dog and cat manure

Toxic substances

Coloured paper

Bird manure

Leaves, grass clippings,untreated sawdust

Shreded plain paper

Sea weed and kelp

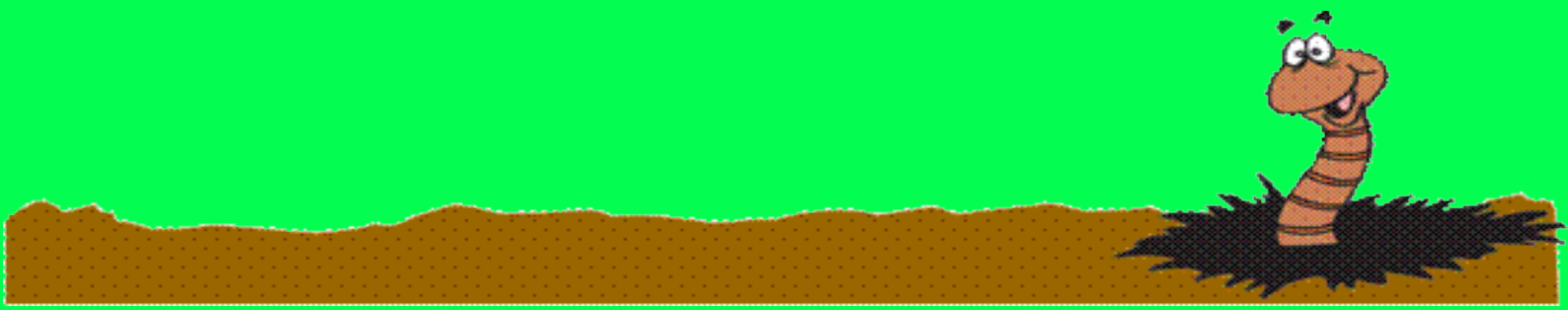
Wood ash

Nappies

Meat and bones

Fat and oils



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Sea weed and kelp	
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Nappies	




HOW WE BUILT OUR BIN 

(Stella, Jaeda and Taika)

1. We made a plan for our worm farm/compost bin.
2. We next collected a variaty of wood to make the bins and decided what pieces of wood we were going to use to make the bin.
3. After that we decided to modify the bin to just a worm farm so it would fit the time frame and the way the wood fitted together.
4. Then we fitted together the pieces of wood without drilling or nailing the pieces together to see what it would look like.
5. After that we drilled four short measured pieces of wood onto the two bottom rectangles to attach the two together and so they would not move.
6. We then sawed the front of the bottom rectangle.
7. Then we measured two sheets of sheet of plywood and drilled lots of holes into the sheets.
8. We then nailed three small measured planks of to the top of the rectangle, then nailed the sheets of plywood onto the planks.
9. We then did step five to the top two rectangles.
10. Next we measured out a rectangle of carpet to be the lid and nailed on the top.
11. Finaly we made a tray to go at the bottom to collect the worm juice.

DONE!!! ☺

(all you need is the worms)

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