

COMPOSTING WITH “AEROBIN”

1. HOT COMPOSTING

The Aerobin is designed for year round aerobic hot composting. Hot composting is desired because it kills pathogens, inoculates weeds and their seeds and creates good quality compost in a short period of time. Aerobic composting also dramatically reduces greenhouse gas emissions and bad smells. The bad smell is the greenhouse gas methane that is 21 times more potent than CO₂ (Carbon dioxide).

2. HOT MICROBES

These little helpers are also known as beneficial bacteria or thermophilic bacteria (heat lovers) quite simply because they benefit us when we aerobically compost, as they are the engine room of the compost process. They are smaller than the eye can see, but work wonders in the right conditions. Like us they have basic needs to live and thrive - air, water, a comfortable (hot) climate and a good balanced diet. So everything you do with your Aerobin should be aimed at making their life easy.

3. AEROBIN'S ENVIRONMENT

Aerobin provides an optimum environment to support aerobic micro-bacteria and aerobic composting. A centralised lung delivers air, a drainage floor ensures the biomass doesn't become saturated and insulated walls stabilise temperature by keeping it warm during colder months and ensures it doesn't overheat and dry out when it's really hot. All that is needed is to provide a good balanced diet of compost materials (the biomass) to feed the hot microbes and deposit it in a way that doesn't smother the pile or block free drainage.

4. KICK STARTING THE PROCESS

How do we get the beneficial microbes in our bins? They are everywhere in varying amounts depending on how suited the environment is to them. As mentioned, the Aerobin provides the right environment, so you just have to add the right food. Initially this needs to be quite precise so the ideal conditions are present for the beneficial bacteria to thrive. A sure way to get the compost going quickly and strongly is to add active compost from elsewhere as a kick-start. This can be from existing compost you have or from compost material purchased from a local nursery – just make sure it is live and not sterilised.

5. BALANCE

A balanced diet is essential to good health and also good composting. The more balanced the biomass, the more microbial activity, and the easier it becomes to manage the composting efficiency of your Aerobin. When there is a lot of microbial activity the compost is more robust and a wider range of material can be composted.

Successful hot composting is achieved with a balance of Carbon: Nitrogen in a ratio of 30:1. This is hard to visualise but in general garden and household organic waste contains a larger amount of carbon and a smaller amount of nitrogen. Household waste usually has higher nitrogen content. For example mixing even amounts of kitchen waste and leaves achieves close to the ideal balance. See the recipes at the end of this article for more detail.

6. VARIETY

Just like us the hot microbes love variety. Too much of the same thing can just slow them down, or even stop them in their tracks. The surest way to avoid overloading the biomass with too much of one thing is to mix it up as much as possible. This gives a choice to the microbes and avoids concentrations of material that may not help the balance of the biomass within your bin. A good mix also means that moisture levels are not going to be too extreme and air is available through the biomass. There are two ways to add variety. All mixed up like a salad or thin layered (5-10cm) like a lasagne.

7. WATER

Beneficial microbes prefer to be in a moist environment. The material added to the bin should be moist to touch like a squeezed sponge or mop. If the biomass is too wet, aerobic bacteria can't breathe and anaerobic bacteria take over. If too dry, the microbes dry out stagnating the compost. Like us they like to drink and continue to breathe. As mentioned the Aerobin has a drainage floor and this ensures the bin doesn't get too wet. The Leachate (liquid nutrients) collected in the Leachate Tank is a prize for your garden and can be collected and diluted to benefit pot plants, garden beds and lawns – diluted 20 parts water to 1 part Leachate.

8. ODOUR INDICATORS

Odours can tell you how your compost is working and whether the beneficial hot microbes are thriving.

A. Fresh Earthy Smell

If there is a fresh earthy smell this means the composting process is going well. The biomass will be moist but not too sticky with air gaps. It will give off heat and the beneficial hot microbes will be thriving. It may even smell sweet.

B. No Smell

If there is no smell this means nothing much is happening and your compost pile is either too dry, or there is a layer or more creating a physical barrier to the airflow, moisture and circulation of the hot microbes. You will need to remix this compost for more balance and variety. Make sure the ingredients are moist like a squeezed sponge. Add higher nitrogen materials like lawn clippings or kitchen waste or fresh leaves or increase with water if simply too dry, particularly if there isn't any of the "wet" materials readily available.

C. Rotten Egg Smell

Rotten Egg smell means anaerobic conditions exist and there is too much moisture and nitrogen rich material present – anaerobic composting is taking place and the result is detrimental to the environment. Again you will need to remix this compost for more balance and variety. Empty the contents on the ground and spread out to reduce saturation. Then mix the contents with scrunched balls of newspaper and cardboard or dried lawn clippings and loose dried leaves until the mixture is moist like a squeezed sponge. Ensure the drainage holes at the bottom of the bin are clear. Cover the base of your Aerobin with a layer of dry material such as sugar cane mulch or coarse dried and loose leaves to reduce the likelihood of blockages occurring again. Then place the compost mixture back into the bin.

CONCLUSION

Like life, composting has basic needs of air, water, food and a stable temperature. Aerobic compost is a living process, namely the beneficial heat loving microbes. They are the little helpers that create good compost and everything we do in managing aerobic composting is aimed at making their lives easier.

Composting has been with us for thousands of years – Aerobin is simply a device that provides the perfect environmental conditions for sustainable static aerobic composting 12 months of the year. All you have to do is ensure that you get started well and then continue to serve a balanced compost salad or lasagna to our microbial friends.

Good luck and good composting.

RECIPES

A. Kick Start

1. Load in a 10cm layer of either dry leaves or sugar cane mulch or similar. This protects the drainage floor from blockages while you start your compost and is particularly important if you add lots of wet material such as kitchen scraps initially.
2. Seed your bin with beneficial bacteria by using active compost from either another composting bin or via your local garden center or nursery (make sure that it is not sterilized – you can tell because it should feel moist and warm). This will add healthy levels of microorganisms to your Aerobin.
3. Mix the seeding material in with material you are adding such as leaves.
4. Begin adding material in thin layers or pre-mixed.

B. Loose Dry Leaves (lower nitrogen) and loose grass cuttings (higher nitrogen)

Always ensure leaves are loose, dry and not compacted. Mix 2 parts leaves to 3 parts lawn cuttings. Mix together before adding, or layer alternately 4cm of leaves and then 6cm of lawn clippings. Lawn clippings can be substituted with the same quantity of kitchen waste. Or ideally add 2 parts grass and 2 parts leaves then add 1 part vegetable waste for extra variety.

C. Fresh Leaves (lower nitrogen)

With fresh leaves, it's important to not over saturate the pile, so we need to add more dry material and a bit more nitrogen. Add equal amounts of fresh leaves, dry leaves, lawn cuttings and kitchen waste. Layer in 5-10cm layers or pre mix for best results. It works well if you intermittently place 100-200mm strips of cardboard vertically in the pile to create air pockets, however this is more desirable than essential.

D. Mainly kitchen vegetable scraps (higher nitrogen)

Every time you achieve a 10 cm (4 inches) layer of kitchen waste then cover with a 5cm (2 inch) layer of dried leaves, or 2.5cm (1 inch) of sugar cane mulch can be substituted for dried leaves. Or mix 1 part scrunched up balls of paper into the 4 parts kitchen scraps. Again alternatively place 1 part cardboard in 100mm (4 inch) long strips vertically in the pile to 4 parts vegetable waste and this will help create air pockets as well.

Note: Using kitchen scraps can be tricky when starting your bin. Ensure your drainage floor is well covered with some dry, freely draining material such as sugar cane mulch. Seeding your bin with some active compost can really make a difference too! (see Kick Start section above). Otherwise you will need to be careful to get the balance right until your compost is "cooking".

E. Paper and cardboard (very low nitrogen)

Use sparingly and in good balance with other materials, as paper and cardboard has low nitrogen content. It can be used to augment all the above recipes, and is particularly useful for creating air pockets. Generally only mix this in small amounts and never apply in layers.

F. Fruit Waste (slightly lower nitrogen but usually too wet)

This is generally moist and a little low in nitrogen. Combine 1 part fruit waste with one part kitchen waste for extra nitrogen and 1 part dried loose leaves to reduce moisture.

G. Manures (high nitrogen and sometimes too wet)

Manures can be good for compost, particularly Horse Manure and Rotten Cow manure. When dealing with manures, be careful to balance moisture as well as nitrogen as both are important.

Horse manure/rotten cow manure: mix 3 parts manure to 1 part dried leaves.

Fresh Cow manure: mix 1 part cow manure to 1 part wood chips or 1 part loose and course dried leaves.

Sheep manure: mix 1 part sheep manure to 1 part wood chips or 1 part loose and course dried leaves.

Stable manure: mix 3 parts stable manure to 1 part fresh leaves and 1 part scrunched paper or shredded cardboard.

Chicken manure: mix 1 part chicken manure to 1 part paper and cardboard and 3 parts fresh leaves.

Substitute 3 parts leaves with 1 part fruit waste

HINTS

- It is common to have large amounts of paper and garden waste on the weekends and kitchen waste during the week. To maintain more balance, store paper, leaves and cardboard near the Aerobin on the weekend so it can be added evenly during the week. If your garden produces lots of leaf and lawn materials, try to store them to one side so they are added in even amounts with vegetable waste.
- Don't add glossy prints or magazines as this may contain toxic pigments
- Ensure egg shells or bulky items are crushed or broken up.