



COMPOSTAR é RECICLAR!

COMPOSTING GUIDE OF
THE MUNICIPALITY OF
ARGANIL





*Organic
+ Sustainable*



It is with great satisfaction and with great anticipation of the positive impact it will have on the community of Arganil that we bring you the project “**Compostar é Reciclar!**” (Composting Is Recycling). Through this project, we intend to encourage the composting of kitchen and garden waste, assigning a compost bin to families and other participants and providing specific training on the domestic composting process.

The composting process ends in the backyard, with the application of compost, an excellent fertilizer that will help create more resilient plants and trees within the current framework of climate change.

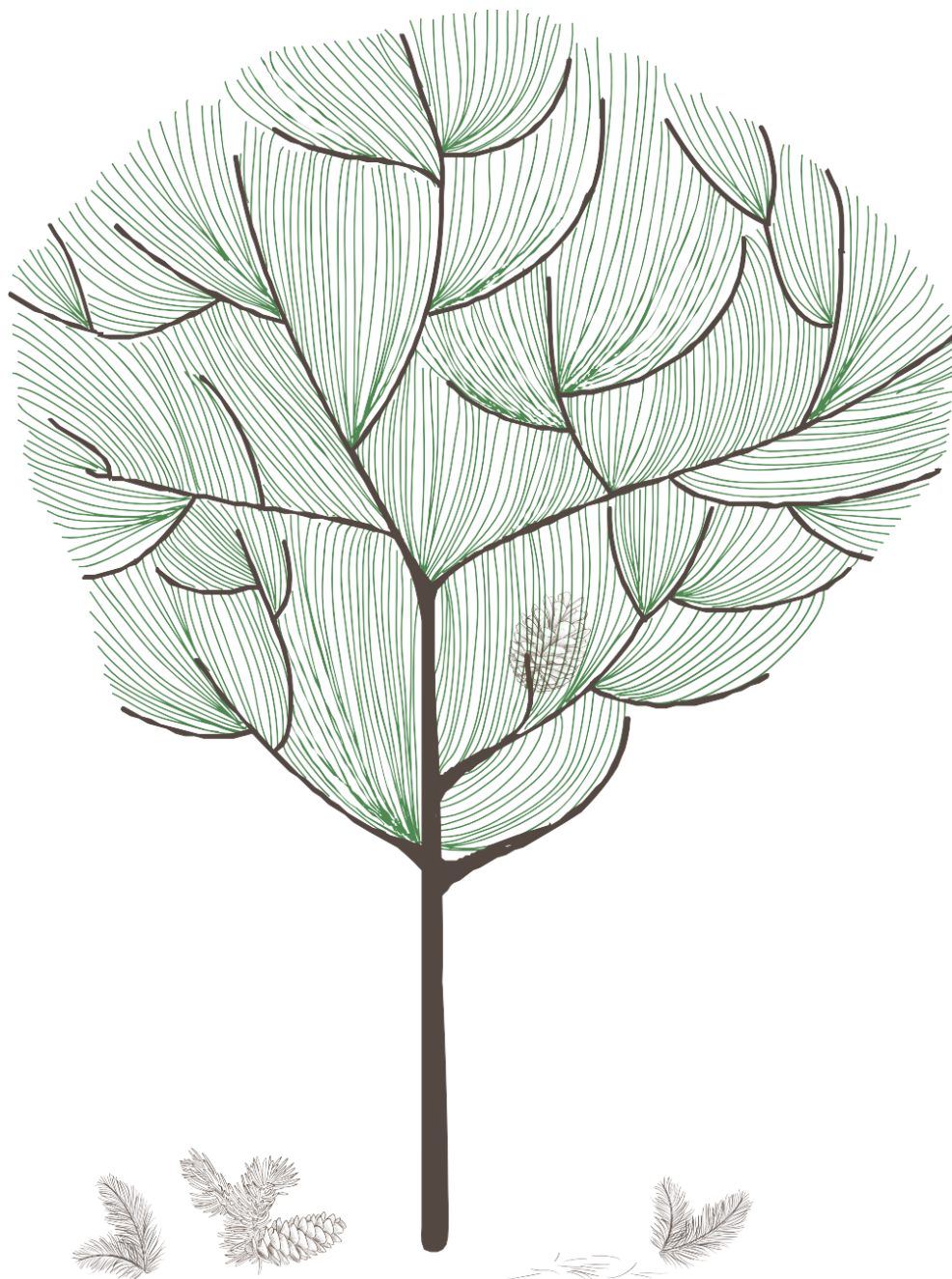
The immediate interest shown by the people of Arganil since we opened registration for the assignment of compost bins not only reveals our community's commitment to solving environmental and public health problems, but also allows us to foresee the success of this project.

We are counting on you in this work to reuse bio-waste, making our community more sustainable. The Arganil municipal technicians are available to help you with this challenge.

Thank you for contributing to a more environmentally friendly municipality.

Luís Paulo Costa

(President of the Municipality of Arganil)





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RAW MATERIAL

What is bio-waste?

Bio-waste or organic waste are materials of biological origin generated in our kitchens, as well as garden, backyard and other agricultural waste.

- **Bio-waste generated in kitchens:** vegetable peels, leftover vegetables, fruit peels, coffee and tea grounds, napkins and used kitchen paper.
- **Bio-waste from gardens, backyards and agricultural waste:** grass clippings, dry leaves and branches, pine needles, agricultural products that are not suitable for consumption such as rotten fruits and vegetables.

The first step in good composting is to separate the food waste we produce in the kitchen. A small bucket with a lid is enough to store them. Then, they must be placed in the compost bin together with waste from gardens, backyards and agricultural waste, where they will be transformed into natural fertilizer.

DID YOU KNOW THAT:

45% of the total urban waste produced in Arganil is bio-waste!

Through composting we can reuse them, and thus reduce the costs inherent in the collection, transport and disposal of undifferentiated waste in common containers.

BIOWASTE



COMPOSTING

General Notions

Composting is a natural process of decomposition of organic matter by the action of microorganisms in the presence of oxygen. It is an old technique, the result of which is an odorless “soil” very rich in nutrients – the compost, an excellent organic fertilizer.

WHAT ARE THE ADVANTAGES OF THE COMPOST?

- Provides essential nutrients such as nitrogen, phosphorus and potassium;
- Helps retain water in the soil, mitigating the effects of drought;
- It has natural fungicides that help prevent plant diseases;
- Reduces the need to apply chemical fertilizers.

WHAT IS THE COMPOST BIN FOR?

The compost bin is the container used to make the compost. It has characteristics that allow the entry of oxygen and the easy removal of the compost at the end of the composting process. The compost bin is simple to assemble and use.

CYCYCLE OF ORGANIC MATTER



REQUIRED MATERIAL



COMPOST BIN

Container used to make compost



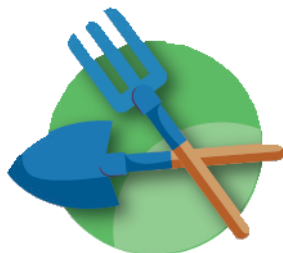
KITCHEN BUCKET

Used to store bio-waste



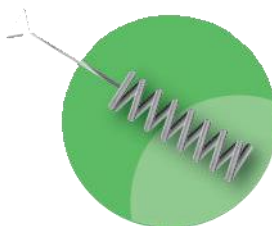
WATERING CAN

Used to lightly water whenever the inside of the compost bin is dry



SMALL RAKE/ SHOVEL

Allows the waste to mix inside the compost bin and promotes aeration



AERATOR

Allows to promote the circulation of air (oxygen)



THERMOMETER

Not essential in the process, but allows you to control the temperature to identify the different stages of composting



PRUNING SHEARS

or any other utensil that serves to reduce the size of waste, thus accelerating its degradation



SUGGESTION:

It will be very useful to register in a small **notepad** some data that allow a good monitoring of the entire composting process, such as: humidity, date of mixing, temperature inside, etc.

WHERE TO PUT THE COMPOST BIN

How to choose the location?

The compost bin should be preferably placed **on the dirt and not on cement or an impermeable floor**, thus allowing the entry of microorganisms and the drainage of excessive water into the soil.

IDEAL LOCATION:

- **Easy access** to allow you to refill the compost bin regularly;
- Sheltered from the wind and with **some sun** and **some shade** - if possible under a deciduous tree, facilitating the control of sun exposure in winter and summer.
- In case the compost bin is exposed too much to the sun, it is necessary to **control the humidity** so that the compost does not dry out too much.
- The existence of **some space** around the compost bin makes it easier to store tree branches, leaves and other waste to be placed in the compost bin.



WHAT TO COMPOST

What can I place?

In general, all biodegradable waste from the kitchen, garden or backyard can be placed in the compost bin. There are, however, some that **should be avoided**: dairy products, meat, fish, cat litter, dog waste, hay from animal bedding, as they can delay the composting process, create unpleasant odors or attract unwanted animals.

For an appropriate outcome, "**green**" and "**brown**" waste should be placed **in similar quantities**, whilst taking care to put them by **layers**.

Green waste (rich in nitrogen) are those with **greater humidity**. The **brown waste** (more fibrous and rich in carbon) **are those with lower humidity**.

NOTE: Do not place too many **fresh grass clippings** (right after mowing), as a compact mass may form, preventing the passage of oxygen. It will be better to leave a part to dry and use it after it has dried.

Nut shells in general (chestnuts, peanuts, etc.) are rich **in fiber and carbon and allow aeration inside the compost bin**, preventing the compost pile from becoming compact. **Chestnut husks and shells**, abundant in the municipality of Arganil, are an important bio-waste that can be used in the composting process.





PLACE GREEN WASTE

- VEGETABLE AND FRUIT PEELS OR LEFTOVERS
- COFFEE GROUNDS AND TEABAGS
- EGGSHELLS (crushed)
- BREAD AND CAKES (small quantity)
- COOKED DOUGH AND RICE
- CEREALS AND LEGUMES
- SALAD GREENS, HERBS AND FLOWERS
- FRESH GRASS CLIPPINGS (moderate amount)



PLACE BROWN WASTE

- POTATO SKINS
- KITCHEN PAPER (used)
- DRY LEAVES AND DRY GRASS
- BRANCHES, PINE NEEDLES AND BUSHES
- WOOD CHIPS (untreated)
- STRAW AND HAY (not contaminated with waste)
- DRIED FRUIT PEELS (chestnuts, peanuts, etc.)



DO NOT PLACE

- MEAT, FISH, SEAFOOD. BONES AND FISH BONES
- DAIRY PRODUCTS, OILS AND GREASY FOODS
- CHEMICAL-TREATED OR DISEASED PLANTS
- ASHES AND CIGARETTE BUTTS
- DIAPERS, ANIMAL FECES OR CAT LITTER
- ANIMAL BEDDING DIRTY WITH EXCREMENTS
- INORGANIC MATERIALS (glass, plastic and metal)



THE COMPOST BIN

How to add bio-waste?

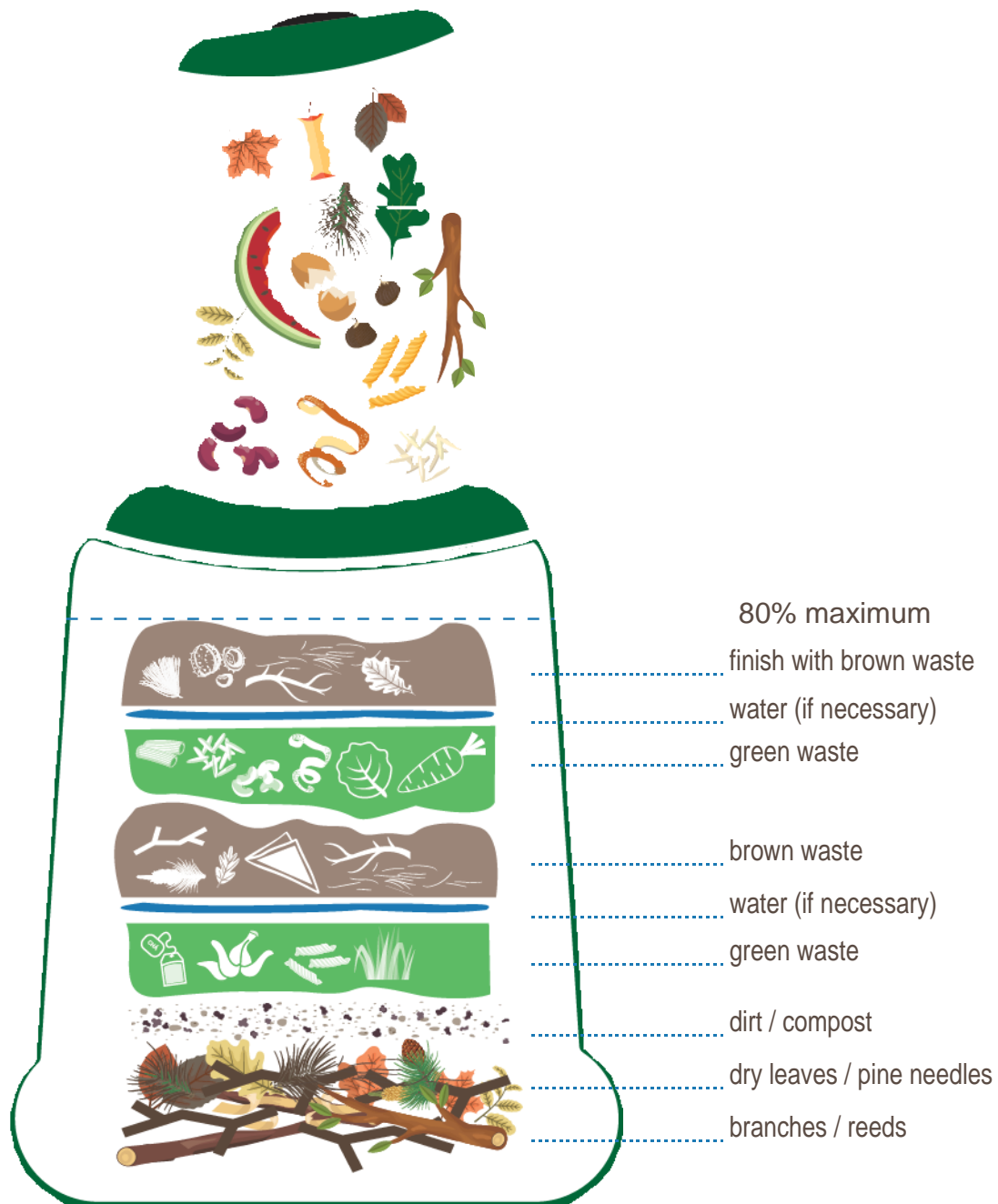
Some rules should be followed to load the compost bin and thus get a “good mix”.

RULES FOR LOADING THE COMPOST BIN:

1. Place between 5 to 10 cm, at the bottom of the compost bin **thick branches** or **reeds**, to promote aeration and prevent compaction.
2. Place **pine needles**, some **chestnut husks** or **dry leaves** on top;
3. Spread a handful of **soil** or ready-made **compost**. This small amount will have microorganisms that, together with those existing in the waste, will activate the compost;
4. Then place a layer of 5 to 10 cm of **green waste**;
5. Add a little **water**;
6. Repeat the previous steps, alternating **layers of green waste and layers of brown waste**, filling the compost bin to approximately **80%** of its capacity.
7. The last layer must always consist of **brown waste**. This last layer will prevent the release of odors and the appearance of unwanted pests and animals.

SUGGESTION

Store grass clippings, chestnut husks or garden leaves beside the compost bin, allowing them to dry. This way you will always have brown waste, ready to be used.



CONTROL THE PROCESS

What are the conditions to be observed?

OXYGEN



It is recommended **to stir the pile periodically** (2 to 3 times a week) to aerate the interior of the compost bin / compost pile. Composting is an aerobic process, so it needs oxygen.

COMPOST PILE SIZE



The **compost pile volume should be as large as possible** so that the temperature can rise.

HUMIDITY



Whenever you notice that the compost pile is too dry **use a watering can and add some water**. The excess or lack of water negatively affects the activity of microorganisms. If the mixture of green and brown waste is done well, it will help to maintain humidity and will avoid the need to water more regularly.

TEMPERATURE



During the composting process the **temperature varies** inside the compost bin. The temperature is controlled using a thermometer. Your **regular register** allows you **to know what state the composting process is in**: higher temperature values (40-65°C) show that decomposition is proceeding correctly.

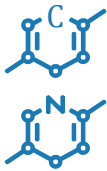
Stir, moisten, observe...

SIZE OF BIOWASTE



The composting process becomes **faster** if the **bio-waste** is **deposited in smaller pieces**. For example, if you have old potatoes and you put them whole, the decomposition process is slow, but if you cut them in half, composting speeds up. Compaction and lack of aeration (e.g. not putting in too much fresh grass) should be avoided.

CARBON AND NITROGEN

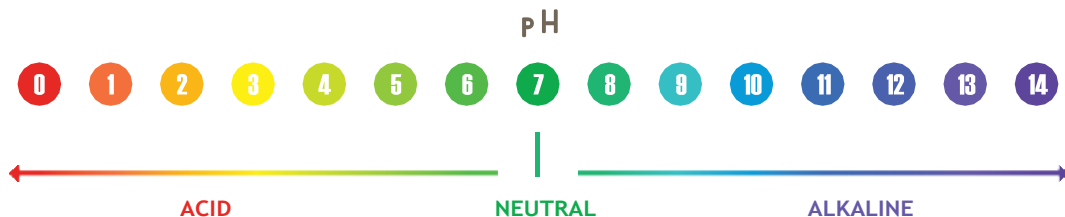


It is very important that **brown waste** (rich in carbon) and **green waste** (rich in nitrogen) are added in **identical proportions**. The nutrients carbon (C) and nitrogen (N) are key elements in the entire composting process.

PH - ACID OR ALKALINE



There are simple devices on sale that allow you to measure the pH of the compost pile. It is recommended that **the pH is in the value range 5.5 - 8.5**. The closer it is to the **value 7**, the better.



PROBLEMS, CAUSES AND SOLUTIONS

What if something goes wrong?

During the composting process, small problems may arise:

SMELL OF ROTTEN EGGS - this is a sign that the pile is very humid.

SOLUTION - add brown waste and stir the compost pile.

SMELL OF MIXTURE OF RANCID BUTTER AND VINEGAR - too much green waste was placed.

SOLUTION - add brown waste to balance the proportion.

THE TEMPERATURE DOES NOT INCREASE - this could be due to a lack of green waste or the compost pile being too dry.

SOLUTION - add green waste, or if the pile is too dry add water and stir.

COMPOSING IS TOO SLOW - the size of the waste placed is too large.

SOLUTION - cut the waste into pieces smaller than 20cm. Mixing a little soil or ready-made compost helps speed up the process.

PILE IS TOO HUMID - there is too much water or the pile is not well ventilated.

SOLUTION - add more dry waste (brown waste) and remove the compost bin lid for a while. Check if the location allows for good drainage. Stir the pile to circulate air.

FRUIT FLIES - "*drosophilae*" sometimes lay eggs in bio-waste that end up in the compost bin, which will eventually hatch.

SOLUTION - cover the waste with strips of damp paper (which will avoid their high number) and make traps (bottles with vinegar) to capture them.

THE COMPOST BIN ATTRACTED ANIMALS (common flies, etc.) - meat, fish, shellfish or food scraps were placed on top of the pile. **SOLUTION** - first remove the materials that should never be placed (see page 11). Then stir the pile to increase the temperature, cover with brown waste and close the lid tightly.

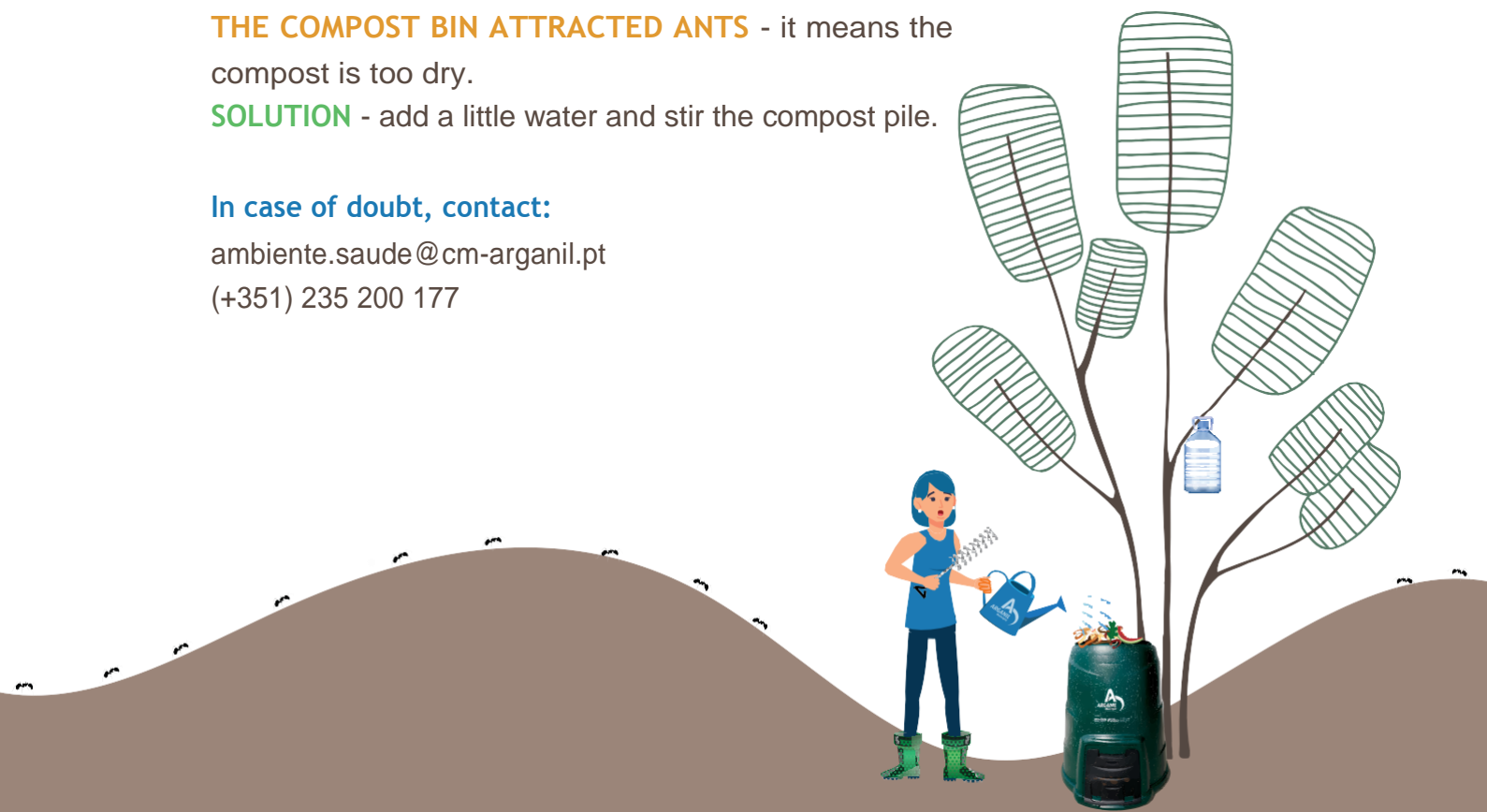
THE COMPOST BIN ATTRACTED ANTS - it means the compost is too dry.

SOLUTION - add a little water and stir the compost pile.

In case of doubt, contact:

ambiente.saude@cm-arganil.pt

(+351) 235 200 177



THE COMPOST

Where and how to use?

When the compost is ready, it looks and smells like dry, dark dirt. To use it, just **mix the compost with dirt**. Then, it can be placed in pots, flowerbeds or applied directly to the soil.

STORING THE COMPOST

The compost, very similar to dry dirt, can be **stored in a dry place** to be used. If it has unwanted elements (plastics, stones, glass, etc.), they must be removed.

APPLYING THE COMPOST

The compost can be applied in **holes** (near the stem), in **coverage** (dispersed over the ground, suitable for vegetable gardens) and also in **lines** (method indicated for forestry cultivations).

SOWING

Place 1 part of compost for 2 of dirt **in a container**. The compost should be very dry and applied a few weeks before sowing.

COVERAGE

Add **a layer of compost about 5 cm** high above the ground to fertilize the plants in the garden.

SUGGESTION

If the soil is very clayey or compacted apply **1/3 dirt, 1/3 sand and 1/3 compost** to promote aeration and decompression of the soil.

I KNOW HOW TO COMPOST!

It's very easy!

- 2.** I put them in the **compost bin** that I placed on the dirt, in an accessible place with some sun and shadow (see page 9).



- 1.** I use kitchen and garden **bio-waste** (see page 11).



- 3.** I am careful to fill it properly with **identical proportion of green and brown waste** (see pages 12 and 13).



SUGGESTION

I use chestnut husks and shells, or other nuts, to foster the aeration of the compost pile. (see page 13).



- 4.** I will **control the humidity** and water whenever necessary (see page 14).



- 5.** I foster the **aeration** regularly, to accelerate the process and to avoid smells.



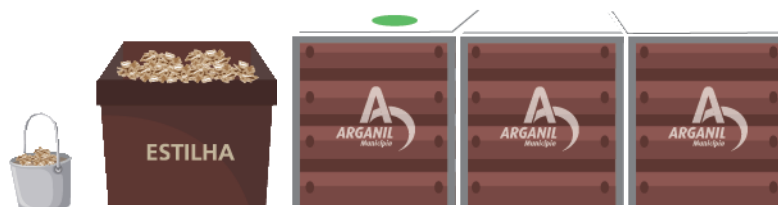
- 6.** I store the compost in a dry place and I use it to **fertilize** my plants! (see page 18).



COMMUNITY COMPOSTING

How does it work?

The community compost bins installed in the Municipality of Arganil can be used by all residents who want to participate. These are appliances that will allow participants to separate and value their **bio-waste** (see pages 4 and 5).



The community compost bin is made up of 1m3 units, and users must open the module marked with a **green circle** on the lid, as it will only be the one that will be in use at that time. The remaining modules will be closed since the composting process will be taking place inside, and will be supervised by technicians responsible for the composting.

After dumping the bio-waste in the compost bin, place a **bucket with wood chips** to cover the waste. The wood chips, a dry woody material from pruning remains, will be available in a box next to the community compost bin.

IMPORTANT:

Never place plastic bags inside the compost bin as they prevent composting and can cause problems.

How is it done?

1. Correctly separate kitchen waste (see page 11);
2. Place the waste in the compost bin module that has the green circle on the lid;
3. Place a small bucket with wood chips on top of the waste;
4. Close the compost bin lid;
5. Keep the location clean, placing the garbage in the bin or in the proper containers;
6. Inform the Municipality or the Parish Council if there is any problem.

Who will receive this compost?

The compost obtained will be distributed to the participants in the process and used in public spaces and gardens in the Municipality of Arganil. With Community Composting it will be possible to transform bio-waste into fertilizer, by reusing waste with the collaboration of the Community and the Municipality. Thank you for your participation!

IN CASE OF DOUBTS OR IN CASE OF ANY PROBLEM CONTACT:

Website: <https://www.cm-arganil.pt>

Email: ambiente.saude@cm-arganil.pt

Telephone: (+351) 235 200 177



NOTES

I WATERED

I MIXED

I HAD A PROBLEM



I WATERED

I MIXED

I HAD A PROBLEM





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