COMPOSTING

For Sustainability and Wildlife

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SOW

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Overview

Why is composting important?

What is it?

How do we make it?

What can we use it for?

Why is composting relevant?

- Increasing Biodiversity
- Reducing resource use
- Improved practices
- Increasing awareness
- Adapting to changing environmental conditions
  - Temperature
  - Water
  - Extremes

Soil Ecology

cannot overestimate underground biodiversity of species

exceeds above ground ecosystems

59% of all species

Food Webs

What is soil?

Mixture of inorganic, organic components and water

- Inorganic molecules
  - Rock minerals created by weathering or fungal action
  - sand, loam, silt, clay
- Organic matter
  - Decomposition of plants, animals, fungi, bacteria
- Water
  - molecularly bound to minerals
  - Soil crumb persist for 50yrs

Usually between few cm and 90cm deep overlaying sub soil

What is Compost?

What do we need it for?

Gardeners/farmers mimicking natural processes to sustain or improve production

Essential successful cultivation often overlooked

What does compost consist of?

Biomass

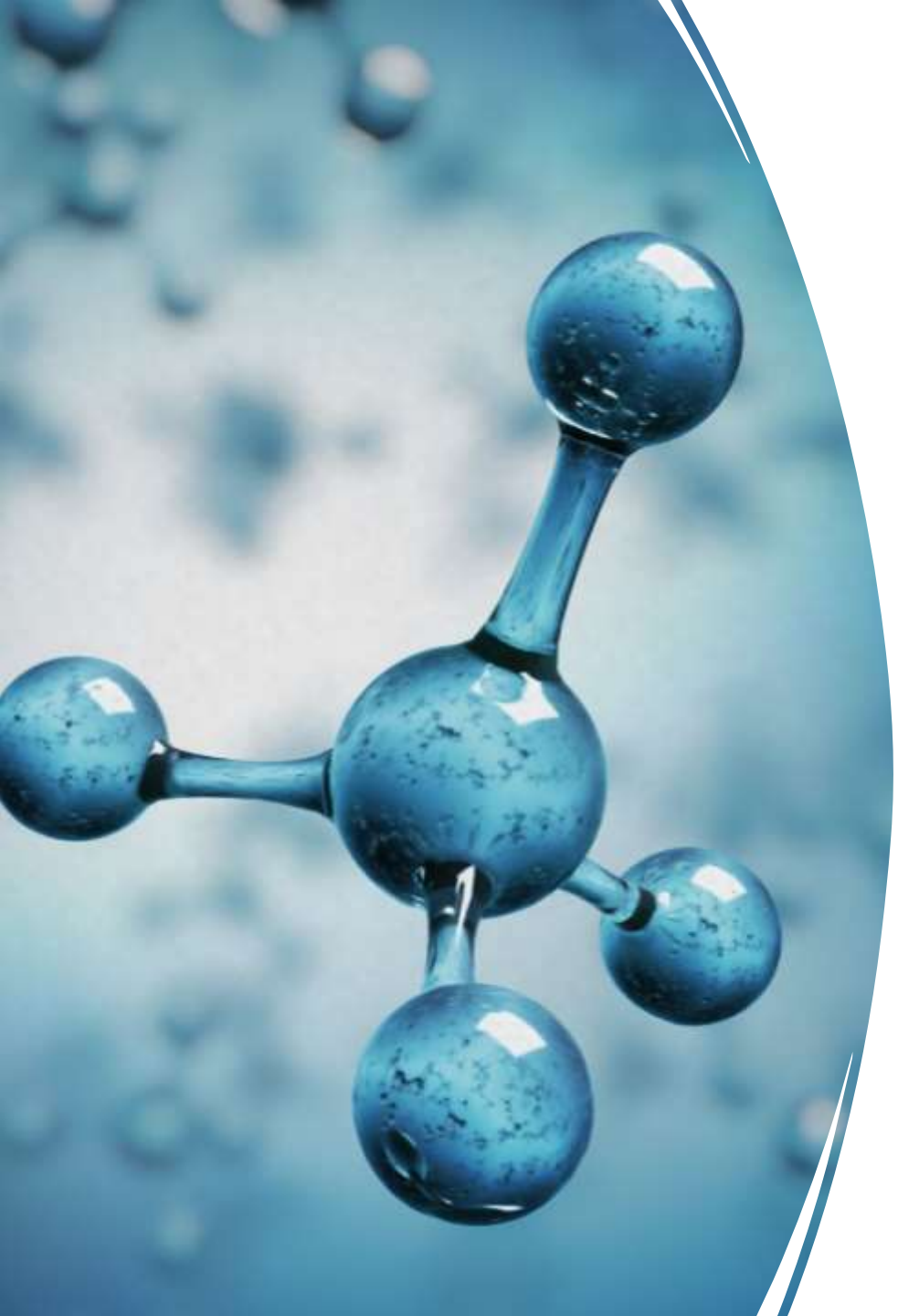
Carbon/Brown: dry leaves, woody material, cardboard

Nitrogen/Green: grass, soft materials, food (?!), eggshells, coffee grounds

1 part N: 2 parts C

What does compost consist of?

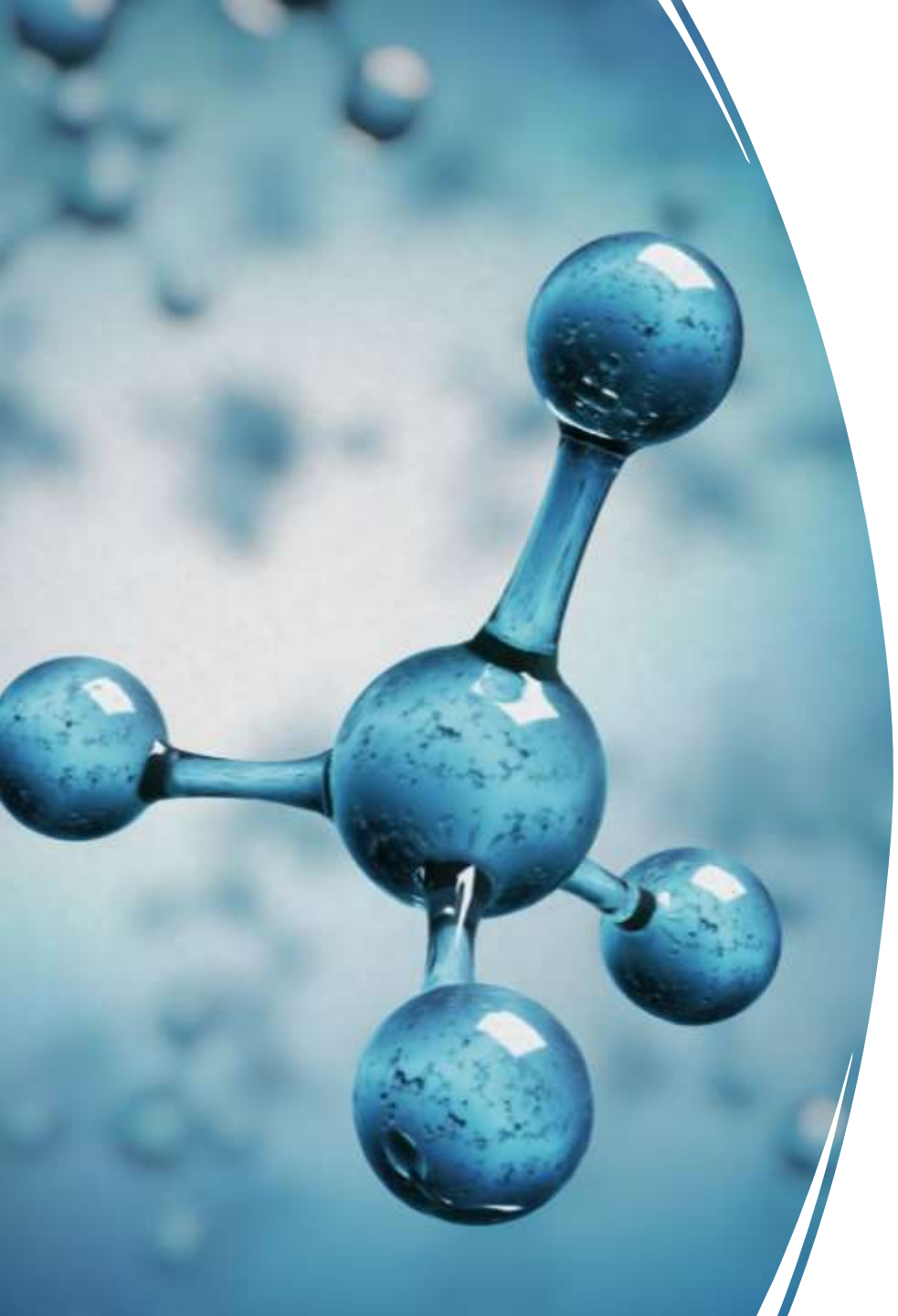
- Fungi and moulds
- Bacteria etc ……
- Other micro-organisms
- Macro-organisms



What are the requirements?

Biomass + water + oxygen = energy (heat) + ammonia + carbon dioxide

$$C \& N + H_2O + O_2 = NH_3 + CO_2$$



What are the requirements?

Fungi & moulds

Damp, cooler, dark 10-42 degree

Bacteria etc…..

Drier, warmer, 45-70 degrees

Micro & macro-organisms

How can we make compost?

Ambient bins

- Container
  wooden pallet, plastic bins
- Warm & dry conditions
  wrapping material
- Aeration
  larger woody material in the base of the bin
  Turn vs not turning?

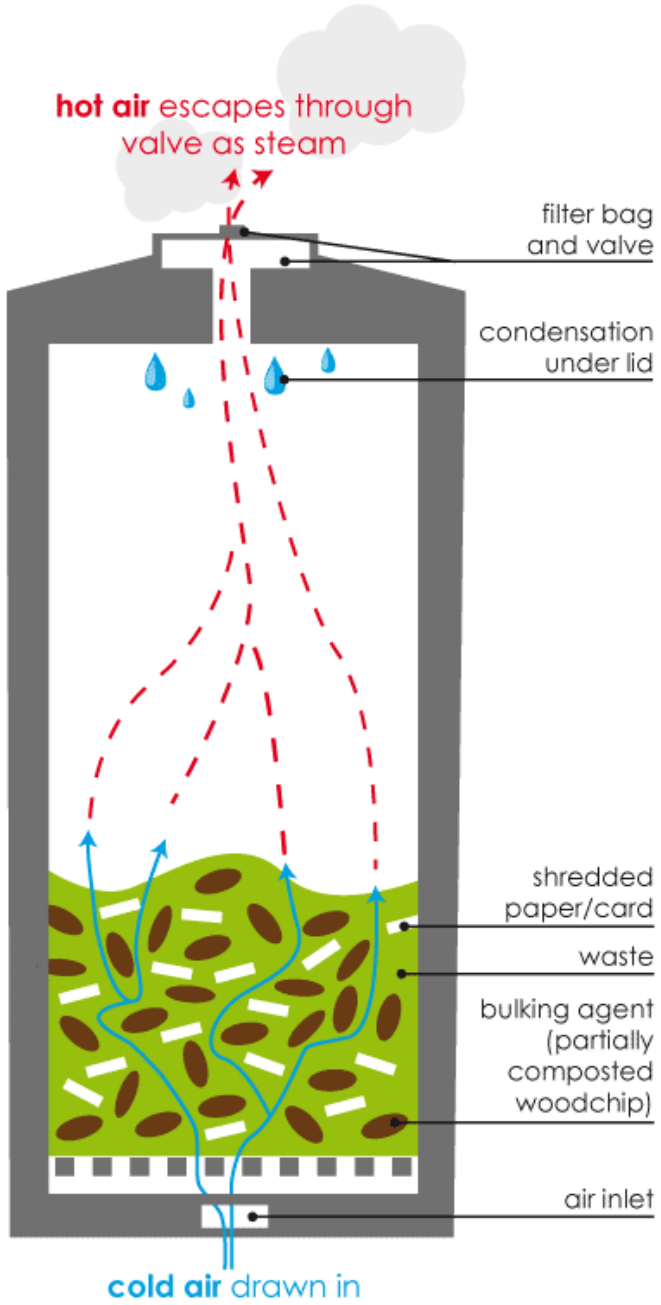
A + B = C + ☺

How can we make compost?

HOTBIN composter

- “aerobic composter relying on oxygen being supplied to NATURAL thermophilic bacteria as they break down waste, producing heat as a bi-product of the bacterial activity”
- 90 days at 40-60 degrees
- Biomass mixture:
  - 5l 3x/week
  - All food, kitchen leftovers
  - Green biomass
  - Shredded unprinted paper, thin cardboard packaging
  - Wood chip = hollow woody stems
- Leachate

HOTBIN basics



HOTBIN End Point

Leachate

'Compost tea'

Use a liquid fertiliser/additive

- K, N (ammonium), Ca, Mg, Na and P
- Fulvic acid and humic acid
    - helps bind minerals and other nutrients together
- Improves nutrient uptake
- Improves stress tolerance
- May inhibit some harmful bacteria

What can compost be used for?

SUSTAINABILITY

Closed cyclic system: minimum in/minimum out

Seed and potting mixes

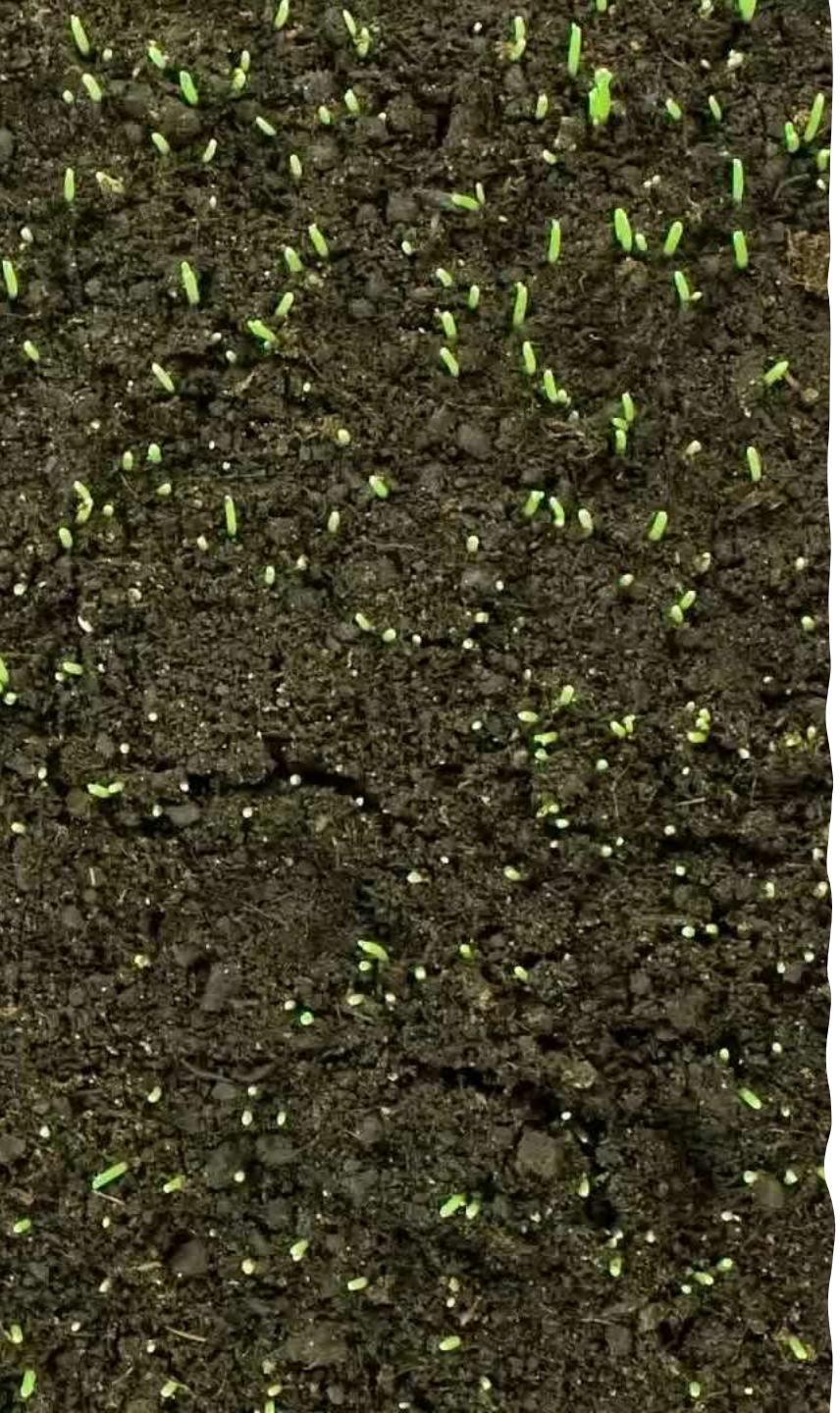
- sieved spent compost - seed mix
- sieved green compost - potting mix (gravel, perlite etc)
- large bits re-composted or added to vegetable garden
- sieved vegetable plot soil - lawn regeneration
- Hot bin - rich spot fertilisation & tomatoes

What can compost be used for?

WILDLIFE VALUE

Leave bins/heaps untouched until Autumn – as hedging and ponds

Increases soil biodiversity



Mulching

Direct composting

leaves, moss, twigs, broken-up dry material,

- Benefits wildlife
- Retains moisture
- Adds nutrients
- Warms and protects soil

Less work 😁

Other improvements

- Ongoing experimentation
- Variations
  - e.g. varieties, siting & positioning
- No dig versus low dig

Conclusion

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Wildlife

Increasing biodiversity

Sustainability

Reduce resource use