

Living Soil

In the slide show...

- Soil improvements
- Living soil
- Making compost
- Mulches

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Recap

- What is...
 - Soil?
 - Soil texture?
- What plants like different soil pH?
 - Acid
 - Alkaline

Soil Improvement

- Sandy soils
 - Add organic matter
 - Well rotted farm yard manure
 - Compost
 - Green manures
- Clay soils
 - Add organic matter
 - Add grit or sand
 - Lime
- Avoid bare soil
 - Rare in natural environments

Organic matter

- Increases micro fauna
- Improves soil texture
- Retains moisture
- Releases excess water
- Holds onto nutrients
- Keeps the soil alive
- Creates mycorrhizal networks



What is organic matter?

Anything once alive

High nutrient

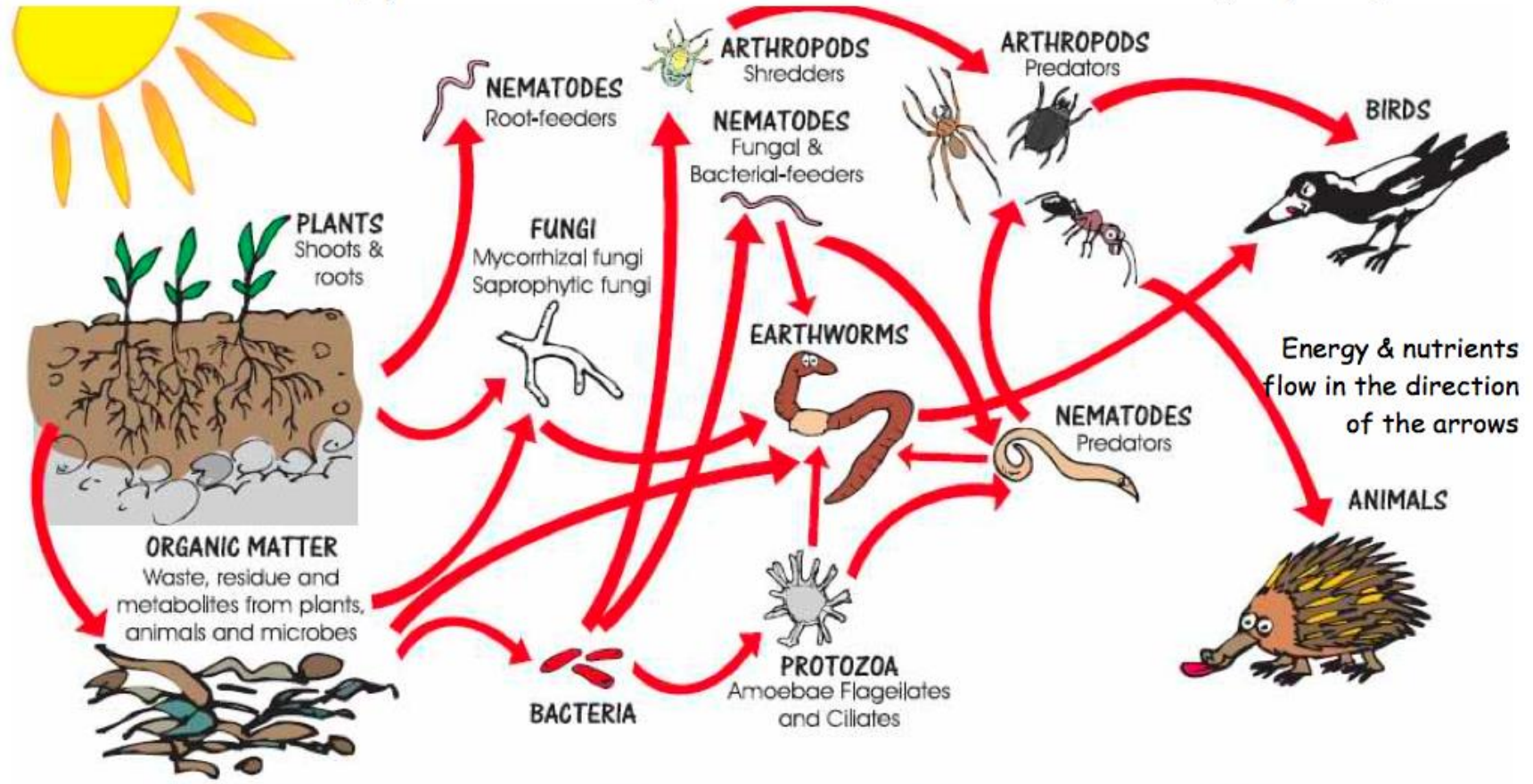
- Garden compost
- FYM
- Chicken manure

Low nutrient

- Bark chippings
- Straw
- Leaf mould

The SOIL FOOD WEB:

- Makes nutrients available without leaching (CEC).
- Rebuilds damaged soil structure (hardpan/compaction).
- Suppresses disease.
- Creates healthy pest-resistant plants.
- Increases water-holding capacity.



- FIRST TROPHIC LEVEL:** Photosynthesizers
- SECOND TROPHIC LEVEL:** Decomposers Mutualists, Pathogens, Parasites, Root-feeders
- THIRD TROPHIC LEVEL:** Shredders, Predators, Grazers
- FORTH TROPHIC LEVEL:** Higher level predators
- FIFTH & HIGHER TROPHIC LEVELS:** Higher level predators

Tillage destroys the soil food web!

Living soil

Documentary

- <https://www.youtube.com/watch?v=ntJouJhLM48>
- Dr Elaine Ingham
 - An American microbiologist and soil biology researcher and founder of Soil Foodweb Inc.

Maintaining the Living Root

- Continuous plant cover
 - protects from soil erosion
- Minimum till
 - Reduced disturbance of mycorrhiza
- Replant beds the same day you remove old crops
 - Gives continued interactions with microfauna

Microrrhizal fungi

<https://www.youtube.com/watch?v=0oyqPZJj-2w>

3.43mins

- Niels Corfield
 - <https://nielscorfield.com/>
- Joel Salatin
 - <https://www.youtube.com/watch?v=IXHrkPC5bok>
- Allan Savory
 - Reversing desertification
 - <https://www.youtube.com/watch?v=j3EhDJyGnGE>
 - <https://www.youtube.com/watch?v=q7pl7lYaJLI>
- Country File – March 2022
 - <https://www.bbc.co.uk/iplayer/episode/m0015xj6/countryfile-seasonal-hub>

Making your own compost

- Aerobic decomposition
- Living organisms
 - Bacteria, fungi and algae
- Temp of 60°C
- Temp drops when softer material consumed
- Larger decomposers move in
 - Worms, beetles and centipedes



Composting

You will have a lot of green waste and need a lot of compost

- Keep heaps contained
- Keep out bulk of the rain
- Prevent heaps from drying out
- Retain heat
- In contact with the ground for earth worms



Ingredients

- Anything that has lived
- Carbon : Nitrogen
- Carbon
 - Fibre
 - Woody stems – Shred if necessary
 - sawdust
 - Paper / cardboard
- Nitrogen
 - Green material
 - Grass mowings
 - Comfrey/ nettles



Making compost

Nitrogen /greens

- Grass
- Green leaves
- Sheep's wool
- Manure
- Urine
- Nettle tops

Carbon / browns

- Wood
- Brown leaves
- Cardboard
- Sawdust
- paper



Hot and Cold heaps

Hot

- Add all the material at the same time
- Turn three times
- Kills weed seeds and disease
- Takes 3 – 6 months

Cold

- Little and often
- No need to turn
- Take about a year

Good compost

- Not too wet or too dry
- Keep good mix
- Turn to aerate
- Press down if to big gaps
- Ideally fill in one go
- Ready to use when materials are unrecognisable



Materials to avoid

- Weed seeds
- Perennial weeds
- Diseased material
- Dog and cat manure
- Autumn leaves
- Hedge clippings
- Woody prunings

Site

- Warm
- Sunny
- Sheltered
- Plenty of space
- On bare ground



Mulches

- Protect from losses
 - Moisture & Soil
- Reduces
 - Annual weeds & Some pests
- Can add nutrients
- Can look attractive
- Can supports soil life
- Keeps plants cool in summer
- Keeps plant warm in winter

- Organic material
- Man made



What materials to use as a mulch?

Natural

- Home Compost
- Municipal GW compost
- Muck
- Woodchip
- Radial wood chip
- Sawdust
- Straw
- Green manures
- Perennial GM
- Grass cuttings/ comfrey

Man made

- Plastic- silage wrap
- Plastic – woven
- Carpet
- Cardboard

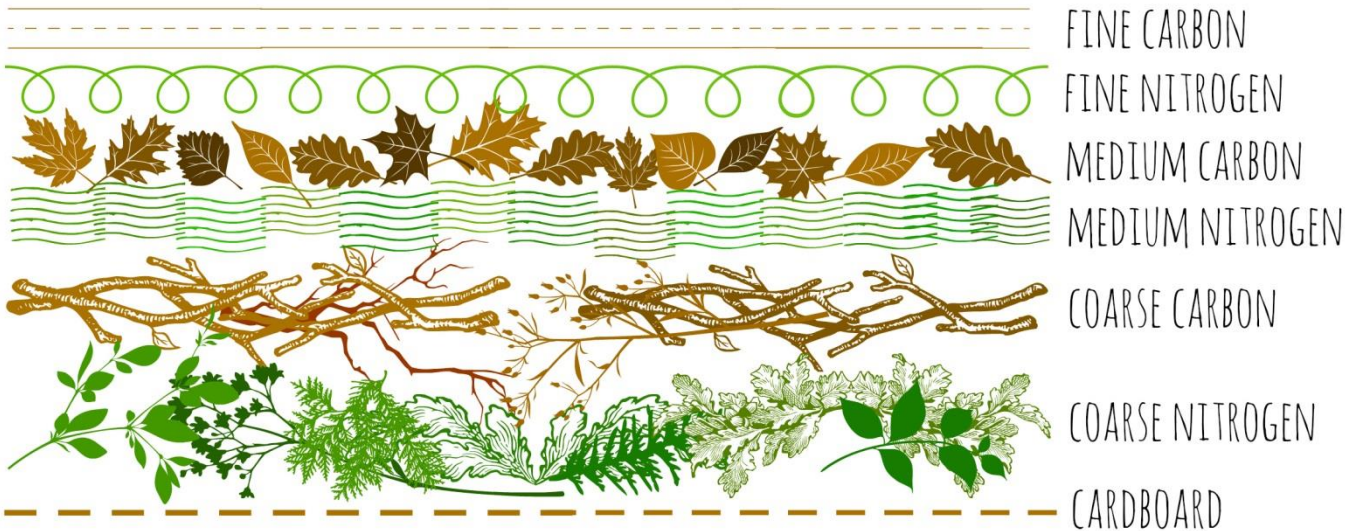
When to mulch

- Any time
 - except when frozen or too dry
- Low nutrient best done Oct – March
- High nutrient in the growing season

NODIG GARDENING

MULCH & SHEET "NO DIG GARDEN"

- Minimum dig



Commercial no dig permanent bed systems



Deep mulch beds, 75cm wide

- JM Fontier – Quebec, Canada
- Richard Perkins- Sweden



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<http://www.ashandelms.co.uk/>