

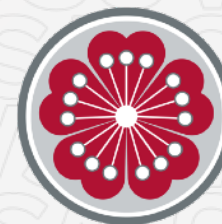


WASHINGTON STATE UNIVERSITY
EXTENSION

The Resilient Yard

Battling Climate Change at Home

WSU Extension
Master Gardener Program





WASHINGTON STATE UNIVERSITY
EXTENSION



Extension Master Gardener Mission

Engaging university-trained volunteers to empower and sustain diverse communities with relevant, unbiased, research-based horticulture and environmental stewardship education.





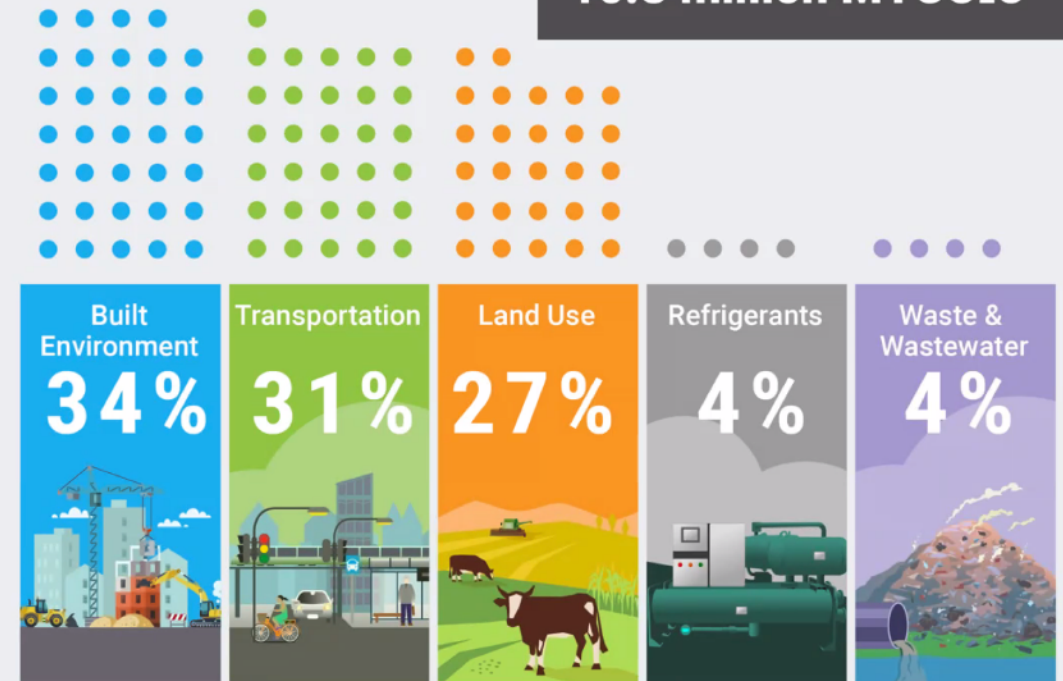
What can I do about Climate Change?

There are three major areas where individuals can impact climate change.

- Built Environment (your home)
- Transportation
- Land Use (your yard)

WHERE DO OUR EMISSIONS COME FROM?

2019 Pierce County
Greenhouse Gas Emissions:
10.8 million MTCO₂e



Source: Pierce County Conservation District, 2023

Contents:



- Introduction & Overview
 - 'Climate Change 101'
- The Suburban Yard
 - The Lawn
 - Garden Beds
 - Veggie Garden



Photo credit: Teresa Casson (EMG) 2023



New Homes



Everything is dug up and carted off. Down to the 'hard pan'

- Above ground:
 - Trees storing decades of carbon
- Below ground:
 - All the rich humus
- Hundreds of years of stored carbon
 - Gone

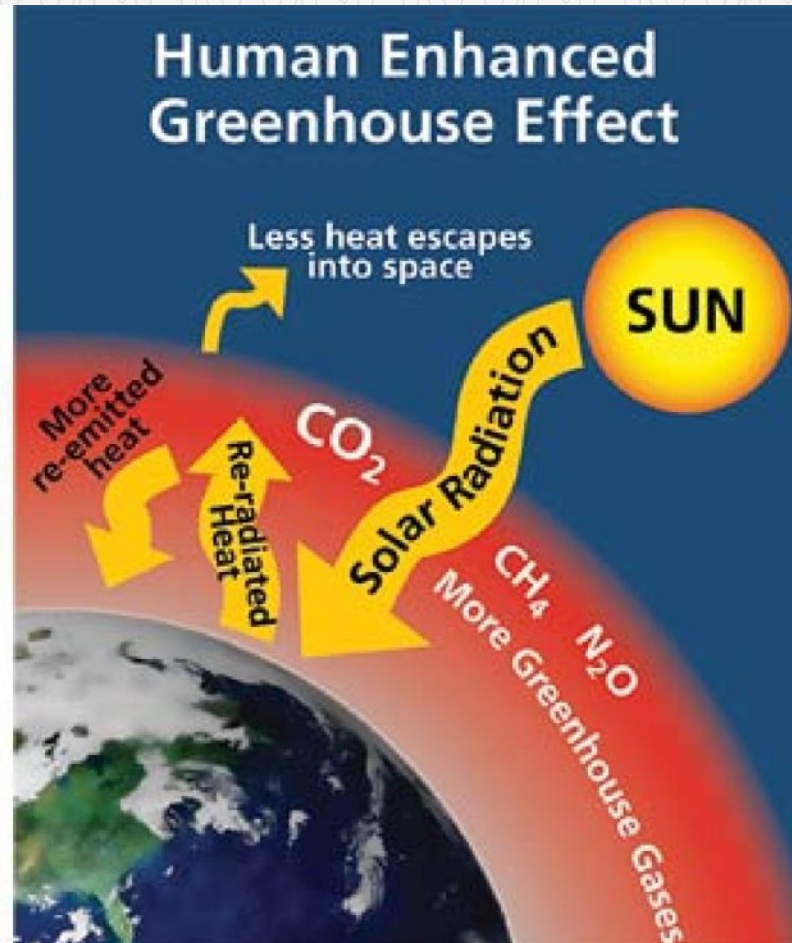
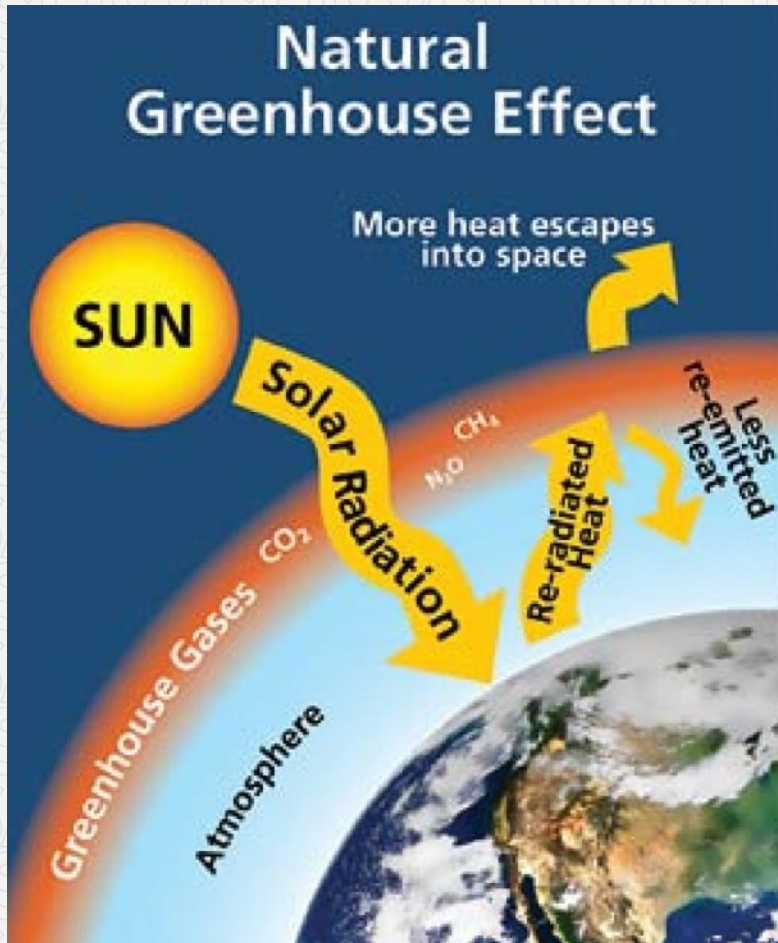
You can rebuild this capability!



Photo credit: Mike Peronto (EMG) 2022



Climate Change '101'



Greenhouse gasses act like a blanket & trap the heat from the sun.

- Carbon Dioxide (CO_2) ~80%
- Methane (CH_4) ~12%
- Nitrous Oxide (N_2O) ~6%

Note:

Earth's carbon doesn't change
Solid/liquid to gas is the issue

Photosynthesis!

Changes CO₂ from gas into carbon that can be stored:

- Plants convert CO₂ to carbohydrates
- ~ 70%* to feed above ground trunk, branches, leaves
- ~ 30% 'exudates' from roots to accelerate....

*What Your Food Ate by David Montgomery & Anne Bickle

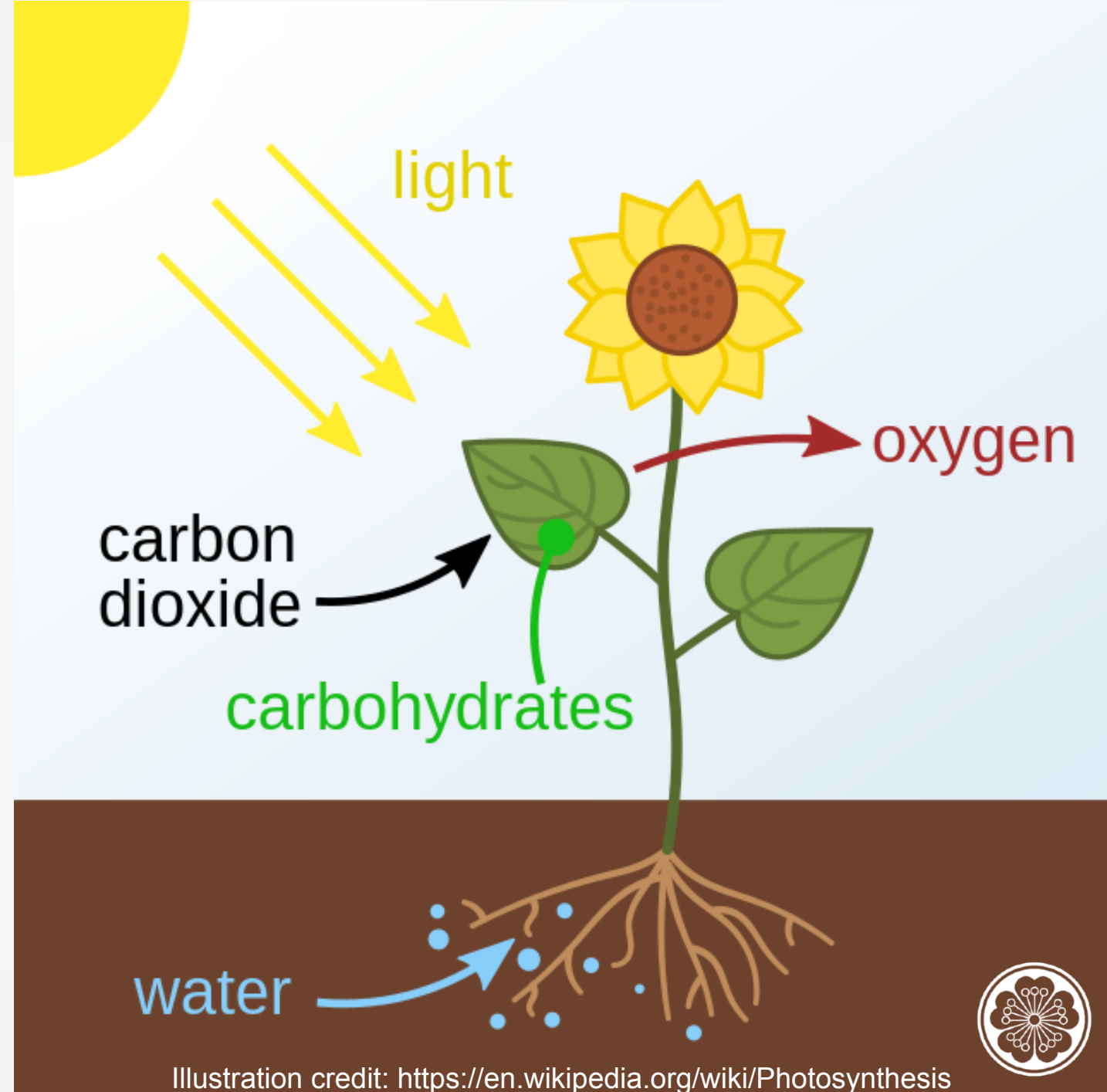


Illustration credit: <https://en.wikipedia.org/wiki/Photosynthesis>



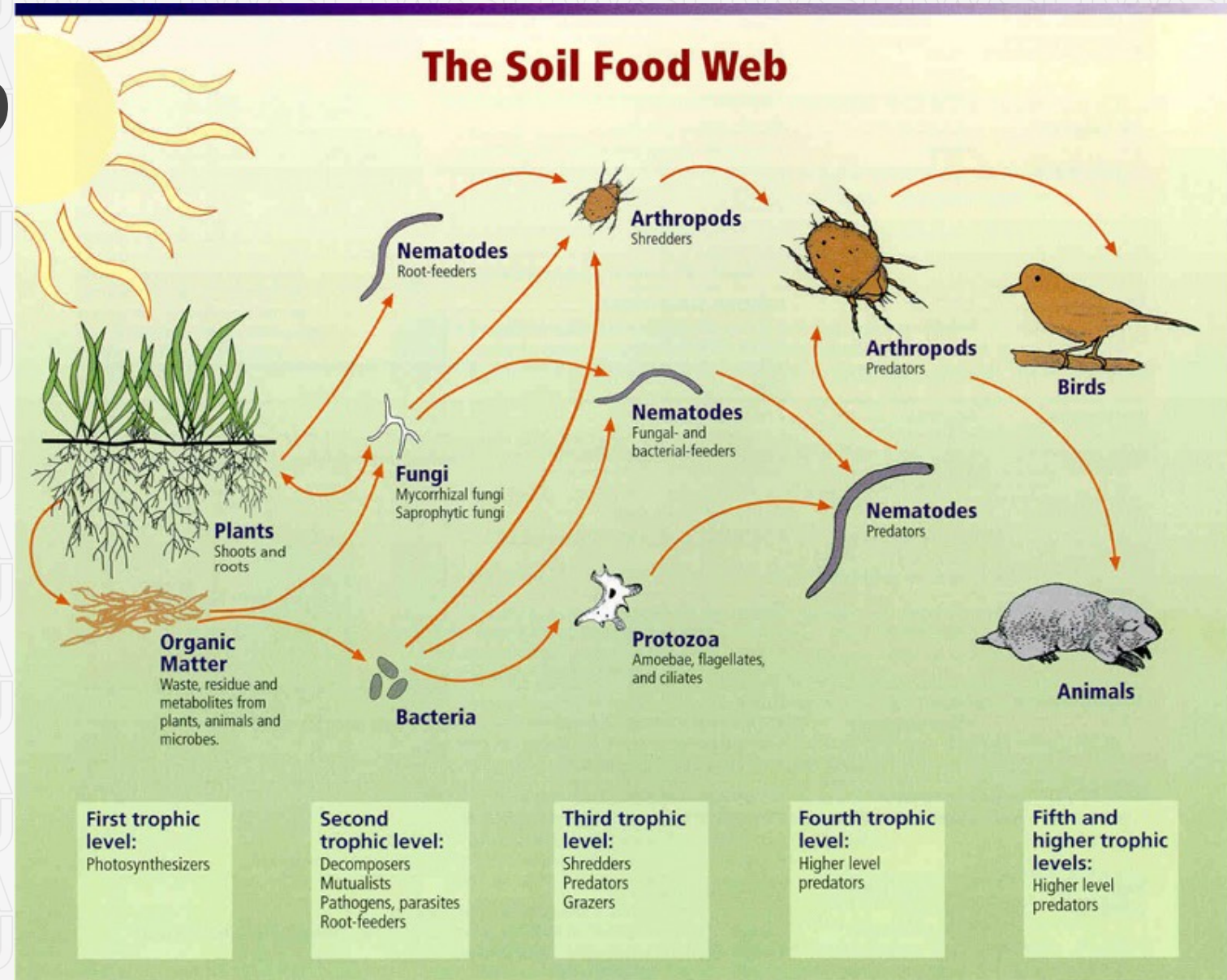
The Soil Food Web

Organisms in/on the soil comprise
~59%* of all life on earth:

- Insects, earthworms, nematodes, springtails
- Bacteria
- Fungi

Once fed, these organisms
'Do what living things do'

*Growing a Revolution by David Montgomery



Relationships between soil food web, plants, organic matter, and birds and mammals
Image courtesy of USDA Natural Resources Conservation Service
http://soils.usda.gov/sqi/soil_quality/soil_biology/soil_food_web.html



Designing & Maintaining your lawn

Primary Strategy: expend less CO₂



“Get rid of your lawn”

- Why?
 - ~ 40 million acres
 - Monoculture
 - Over-watered
 - Too many chemicals
- But
 - ‘American Dream’
 - It *does* store carbon
 - Can be maintained responsibly



Photo credit: Teresa Casson (EMG) 2023

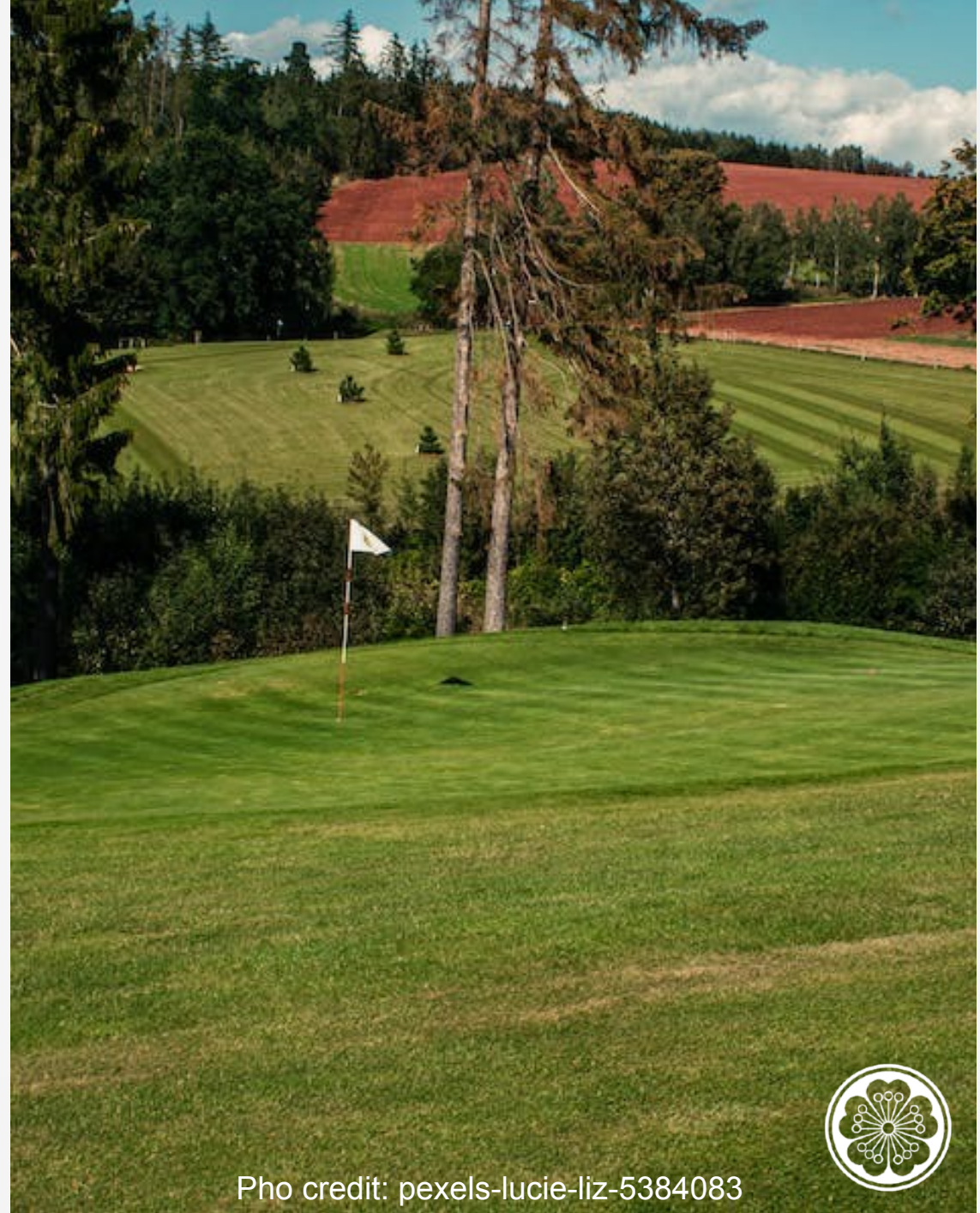


If it stays:

- Minimize 'carbon inputs'
- Reduce synthetic fertilizers
- Optimize watering

If you want it to look like a golf course, think the rough, not the putting green

Mow it long: 2" to 3"



Pho credit: pexels-lucie-liz-5384083





=



1 hr lawn mower use

driving 300 miles
from LA to Vegas



=



1 hr leaf blower use

driving 1100 miles
from LA to Denver

[CARB California Air Resources Board](https://www.carb.ca.gov/AirResources/Pages/default.aspx)



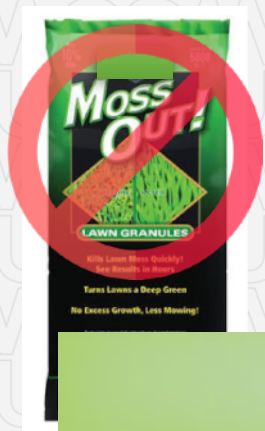
<https://www.nytimes.com/wirecutter/reviews/best-reel-mower/>

Ditch the gas powered tools



- Trimmers, edgers & blowers: electric
- Mowers: electric or reel

If you employ a Yard Service...
It's time to have "*The Talk*"
... switch to electric



Reduce chemical inputs



Thatching Rake

- Fertilizer*: from 4 to 2 times/year
 - Let nitrogen rich clippings drop (25-40%)
 - Add Compost
- Moss Killers & “Weed &” products
 - Stop (add lime instead)
 - Thatch & pull
 - Major issues: Master Gardeners!

* Synthetic fertilizer: 4-6 lbs CO₂e for every 1 lb used

David Wolfe, professor of plant and soil ecology, Cornell University

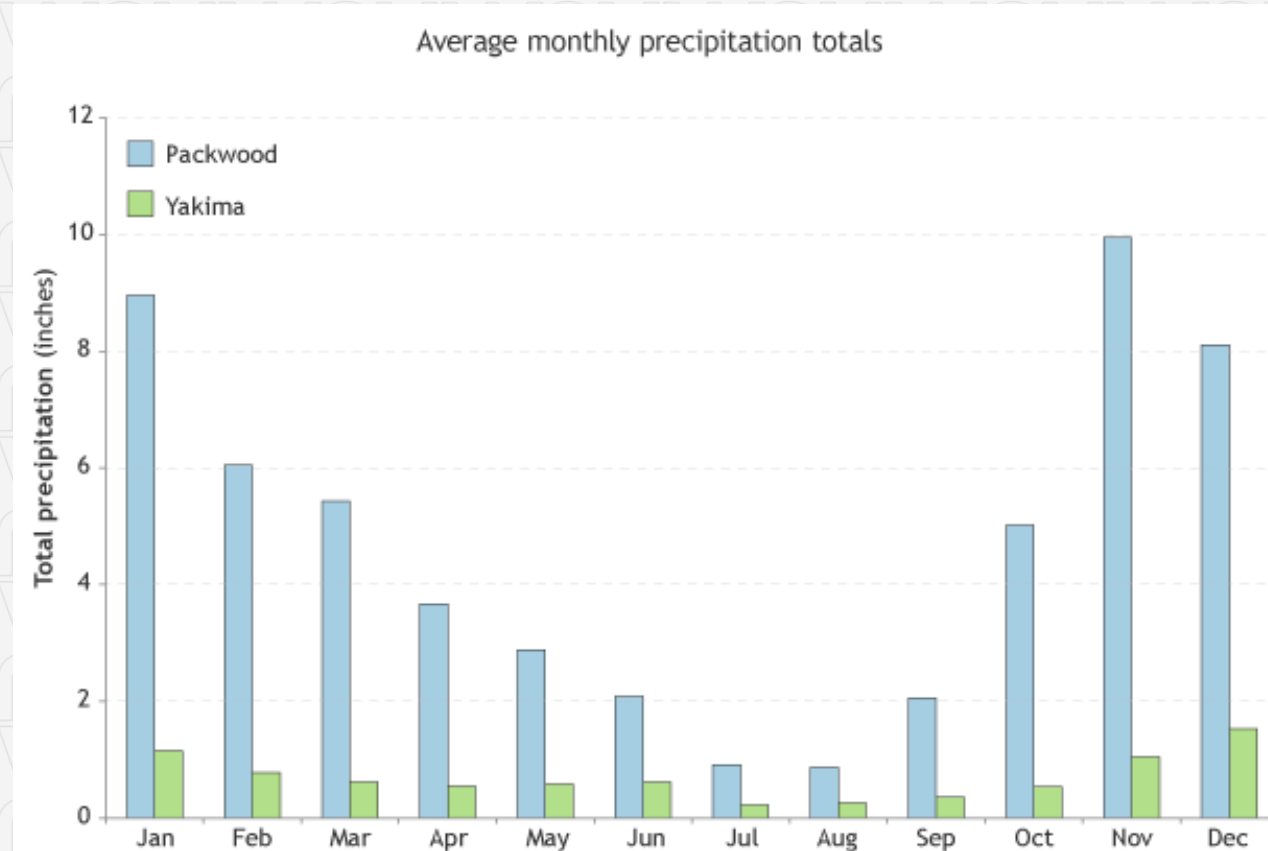
Water: Deep & infrequently



Photographer: Teresa Casson

By Hand:

- 1 time & 1" week
- Tuna can test
- Good soil: sponge



<https://www.climate.gov/news-features/blogs/beyond-data/highs-and-lows-climate>



Irrigation:

- Water savers, IF
- Adjusted frequently
- Check your service provider



Photograph from seattle.gov

Yard Waste:



If you don't have one of these, get one!

- Organic materials in landfill:
- Methane (80x worse than CO₂)
- Why? Decomposes without oxygen

Scorecard:

- Go electric
- Fertilize 2x max
 - Lawn clippings & compost
- Water: 1"/week (even August)
- No "Weed &" products
- Yard waste bin

Just 'TRY'

Carbon Stored: 200-1,800 pounds / acre / year
Source: Ohio State University



Image courtesy of Oregon State University



Designing & Maintaining garden beds

Primary Strategy: store more carbon!



Sun's-eye view

Forest:

- Leaf-capture of *every ray of sun*
- From spring through fall
- Leaving no bare soil

Photosynthesis & Soil Food Web

Water retention & weed control

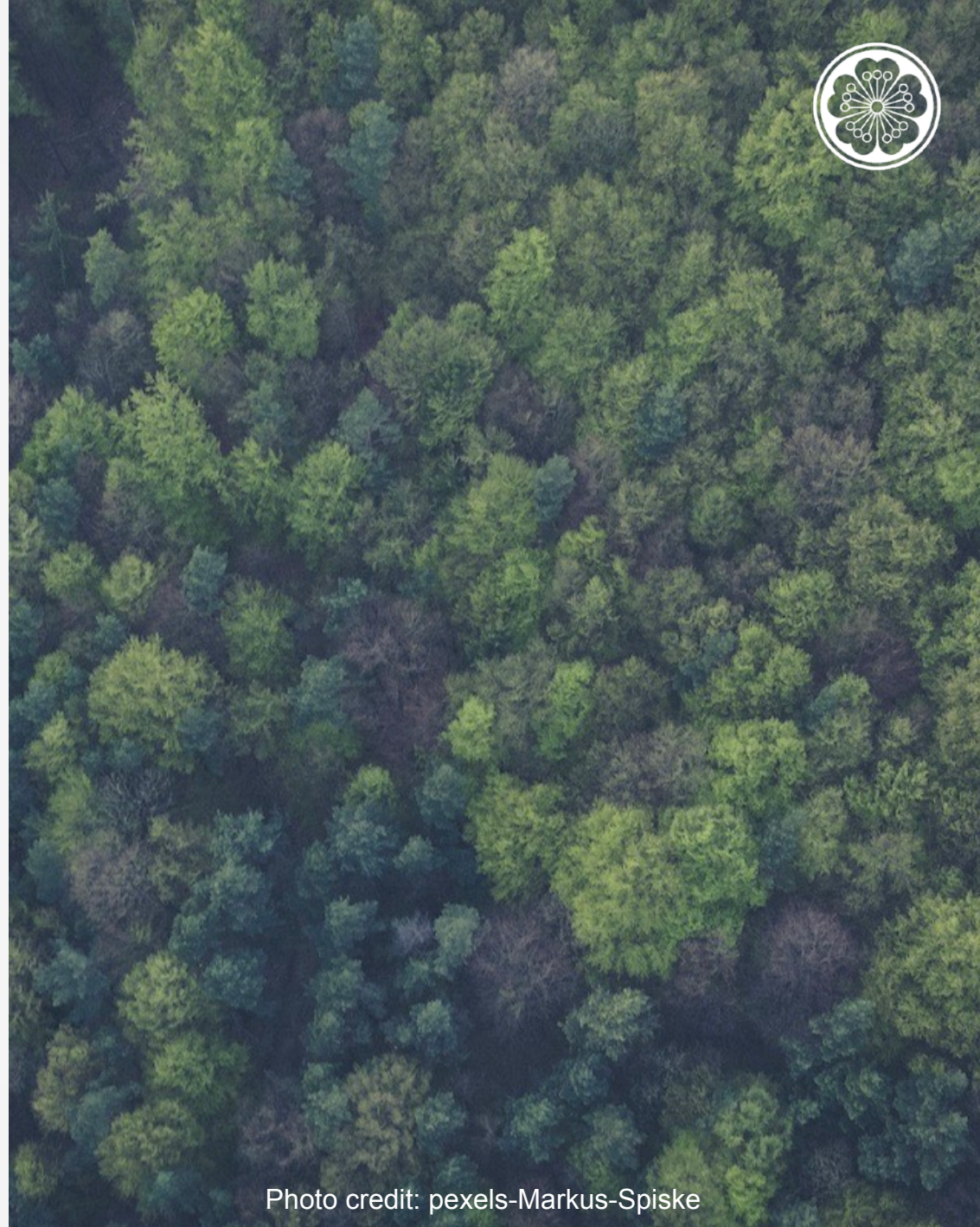


Photo credit: pexels-Markus-Spiske

Sun's-eye view

Housing Development:

- Leaf-capture of *every ray of sun*
- From spring through fall
- Leaving no bare soil

Context:

- Maintain sight lines
- Pre-designed yard

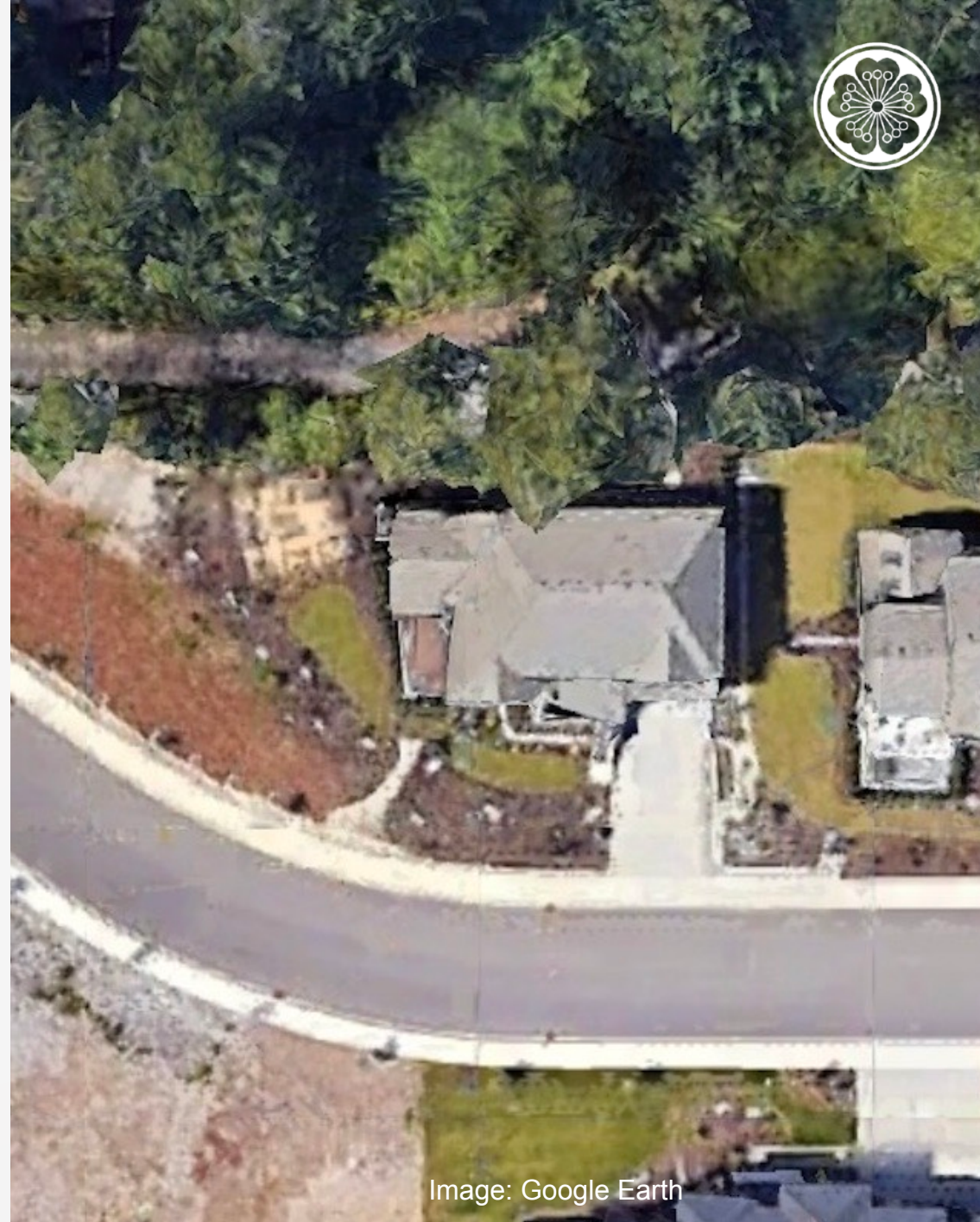


Image: Google Earth

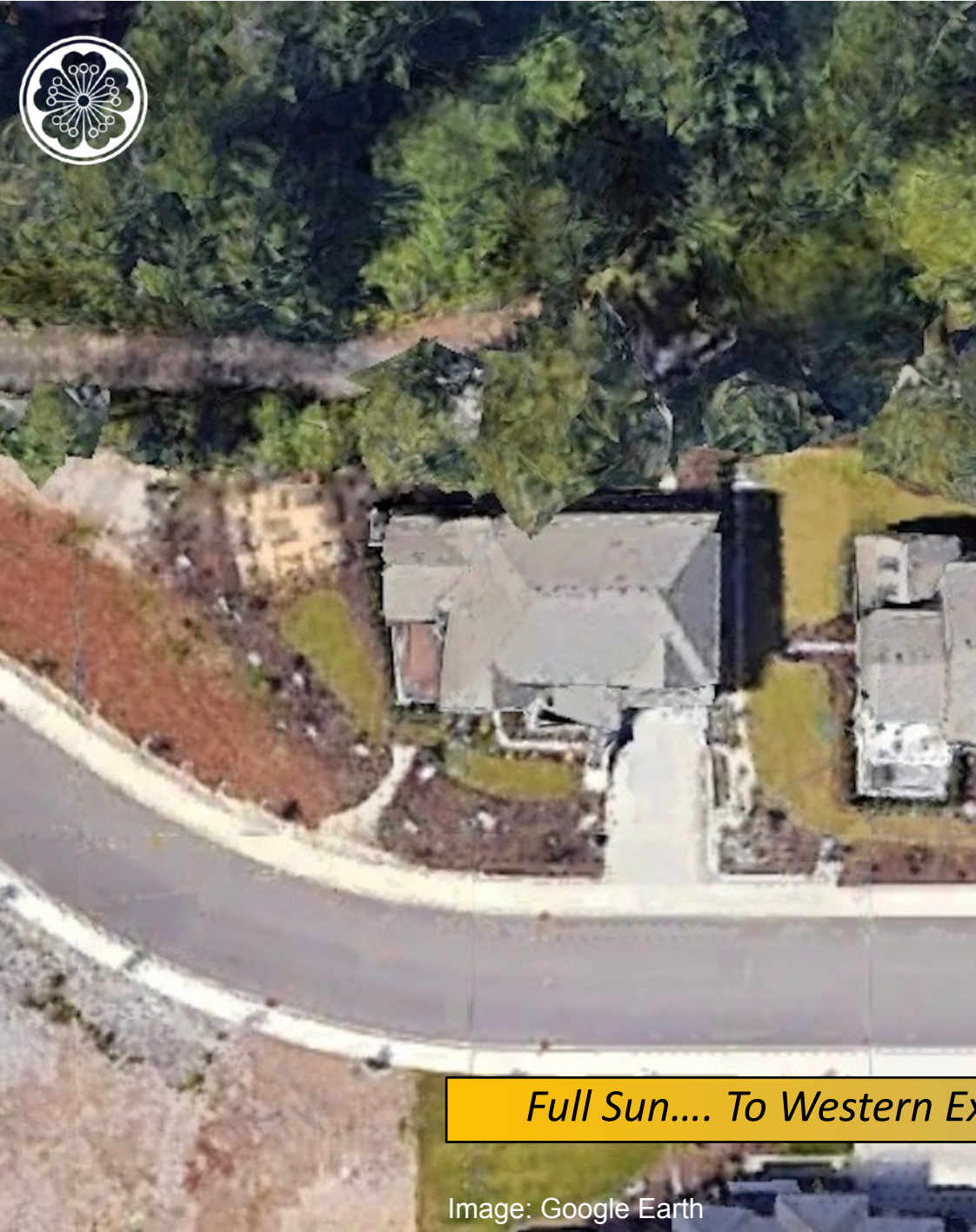


Image: Google Earth

Analyze beds:

- North - full shade
(except...)
- East - morning sun
- South - full sun
(bank shot!)
- West - setting sun



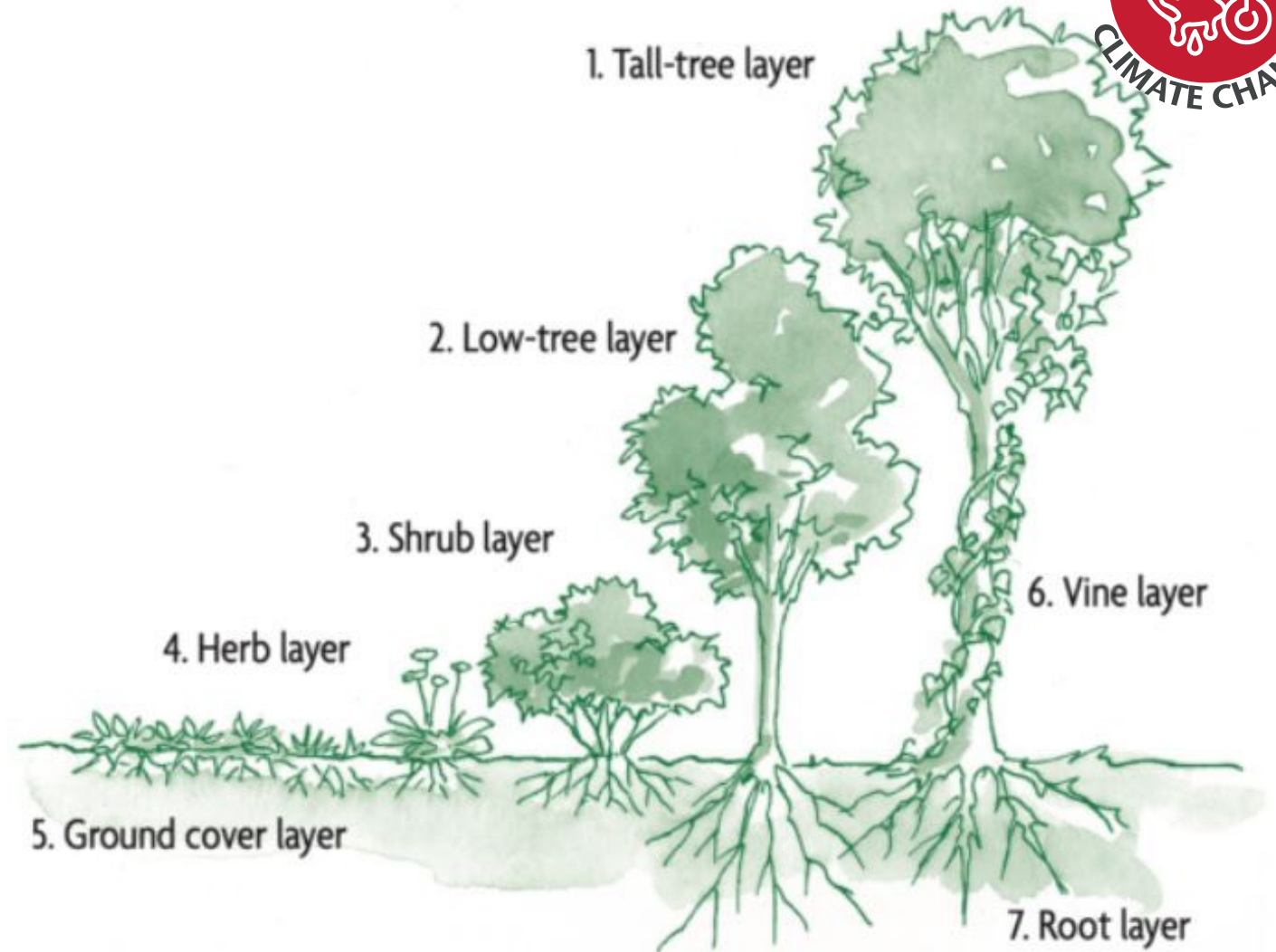


The Layers:

- Trees
- Shrubs
- Ground Covers

- Tallest to Smallest
- North to South

*Cover it vertically,
horizontally & across time.*

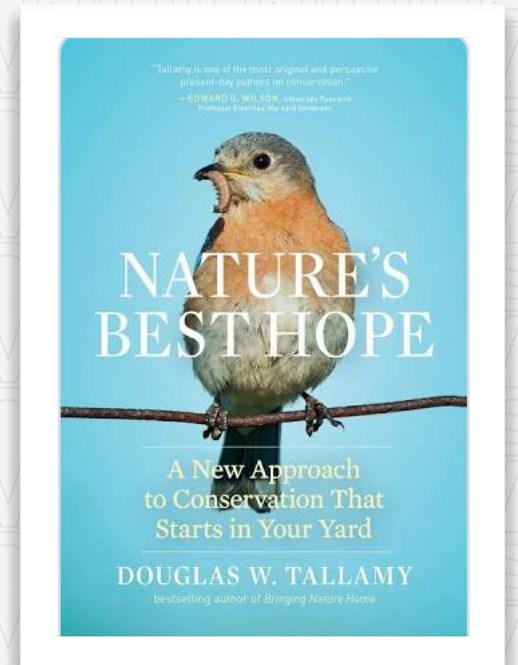


The seven layers of the forest garden.

'Theme' for your beds:



- Native plants
 - Xeriscaping
 - Pollinator gardens
 - Rain gardens
 - Permaculture
- ➔ Climate adapted*
 - ➔ Hot, dry / water access
 - ➔ Help the bees!
 - ➔ Excess water run-off
 - ➔ a.k.a. 'food forest'



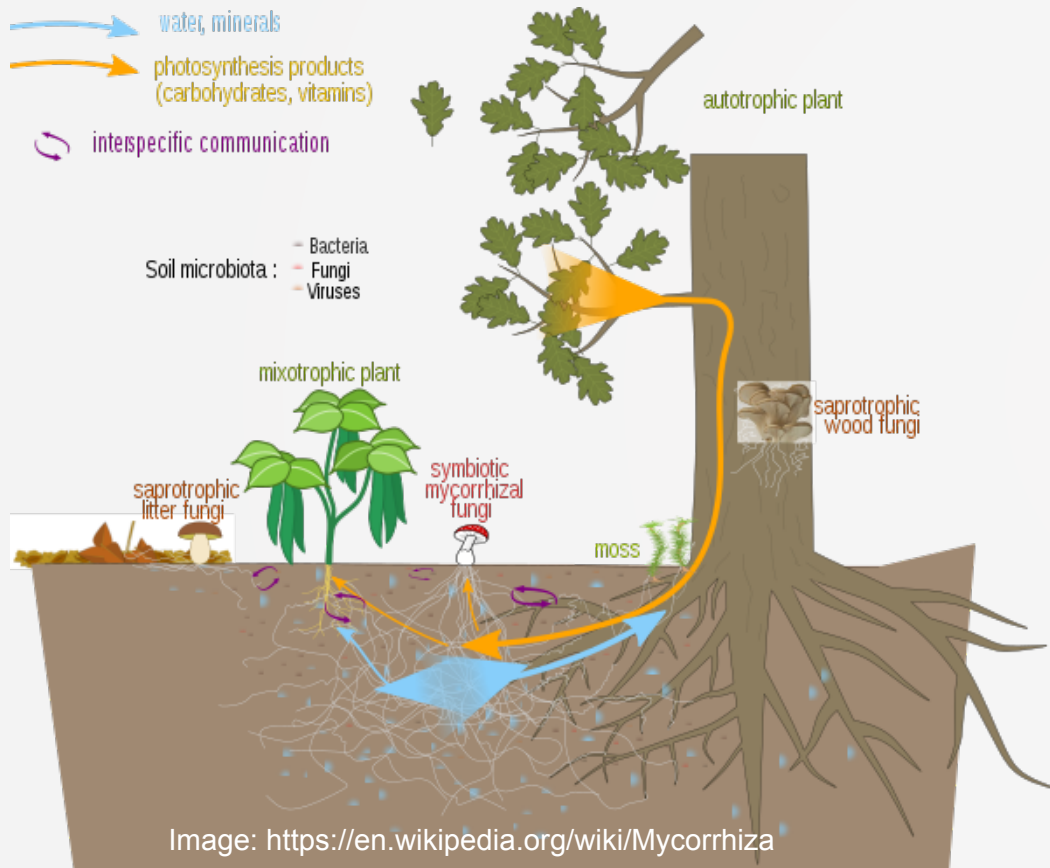
Get your hands dirty

Fundamentals:

- Always building better soil
- Diversify plantings to mitigate climate risk

Annual soil improvement strategy:

- Compost, plant & mulch
- Photosynthesis &
- Soil food web
- Let's talk mycorrhizal fungi!





Diversify your planting

- Reduces climate induced risk
- Improves coverage across space & time
- Attracts pest - predators
- Fewer pests
- Fewer weeds
- Less fertilizer
- Improved water retention



Photo credit: Mike Peronto (EMG) 2023



Photo credit: Teresa Casson (EMG) 2023



Through the seasons...

Spring:

- Amend soil with compost
- Plant shrubs & ground covers
 - According to plan
- Varieties that fill vertical & horizontal, above & below ground

Summer:

- Mulch to prevent evaporation
- Water deeply & infrequently
 - Morning or evening

Fall:

- Upgrade 2nd bed?
- Leave leaf-fall on your beds, mulch with leaves for winter

Winter:

- Cover bare soil
- Next year's bed improvement plan
- Plant trees in late winter

Scorecard



- Enough trees canopy?
- Upgrade bed(s)?
- Expand beds?
- Compost?
- Mulch bare soil?

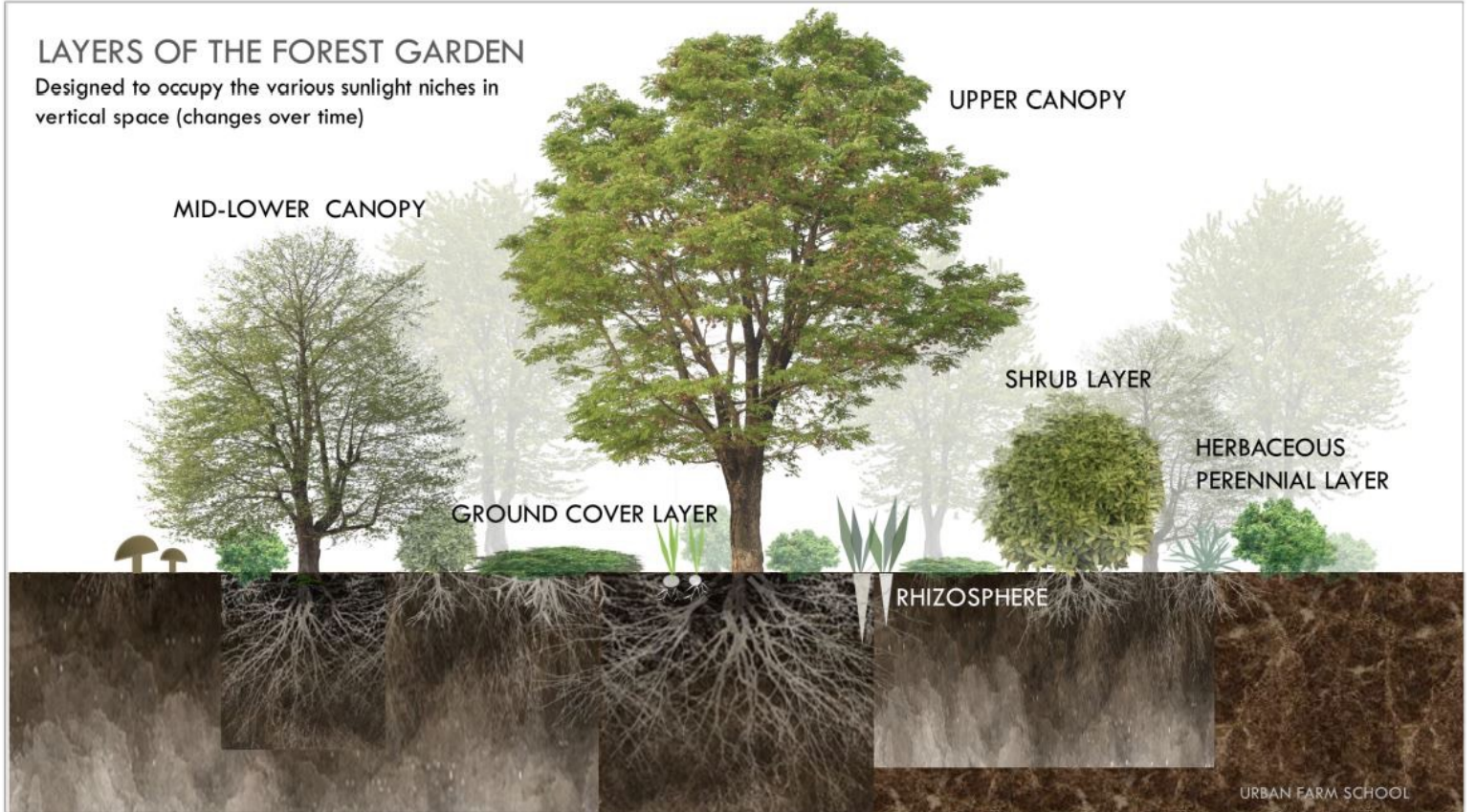


Image courtesy of the Urban Farm School



Growing Veggies at home

Strategy ...





Photo credit: Mike Peronto (EMG) 2023

Why grow veggies?



Food Security

- Worldwide Supply chains under duress
- Inflation

1,494 Miles & 30% Waste

- Average distance food travels to market
- Average amount of food thrown into landfill

Employ Climate Friendly Practices

- Easy @ home, challenging @ scale
- Help pollinators, improve soil & store carbon

Healthy people & healthy planet saves lives and money!



The Resilient Yard

Lawns:

- Minimize CO₂

Beds:

- Maximize capture & storage

Veggies:

- Ease supply chain stresses



Follow on presentations:

Lawn alternatives

Native plants
Pollinator beds

Easy Home Gardening



Questions?

Insert Name

WSU Extension Master Gardener Volunteer

Contact info

<http://mastergardener.wsu.edu/>

[https://www.facebook.com/
WSUMGProgram](https://www.facebook.com/WSUMGProgram)



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