

Maximising carbon storage in Food Forests

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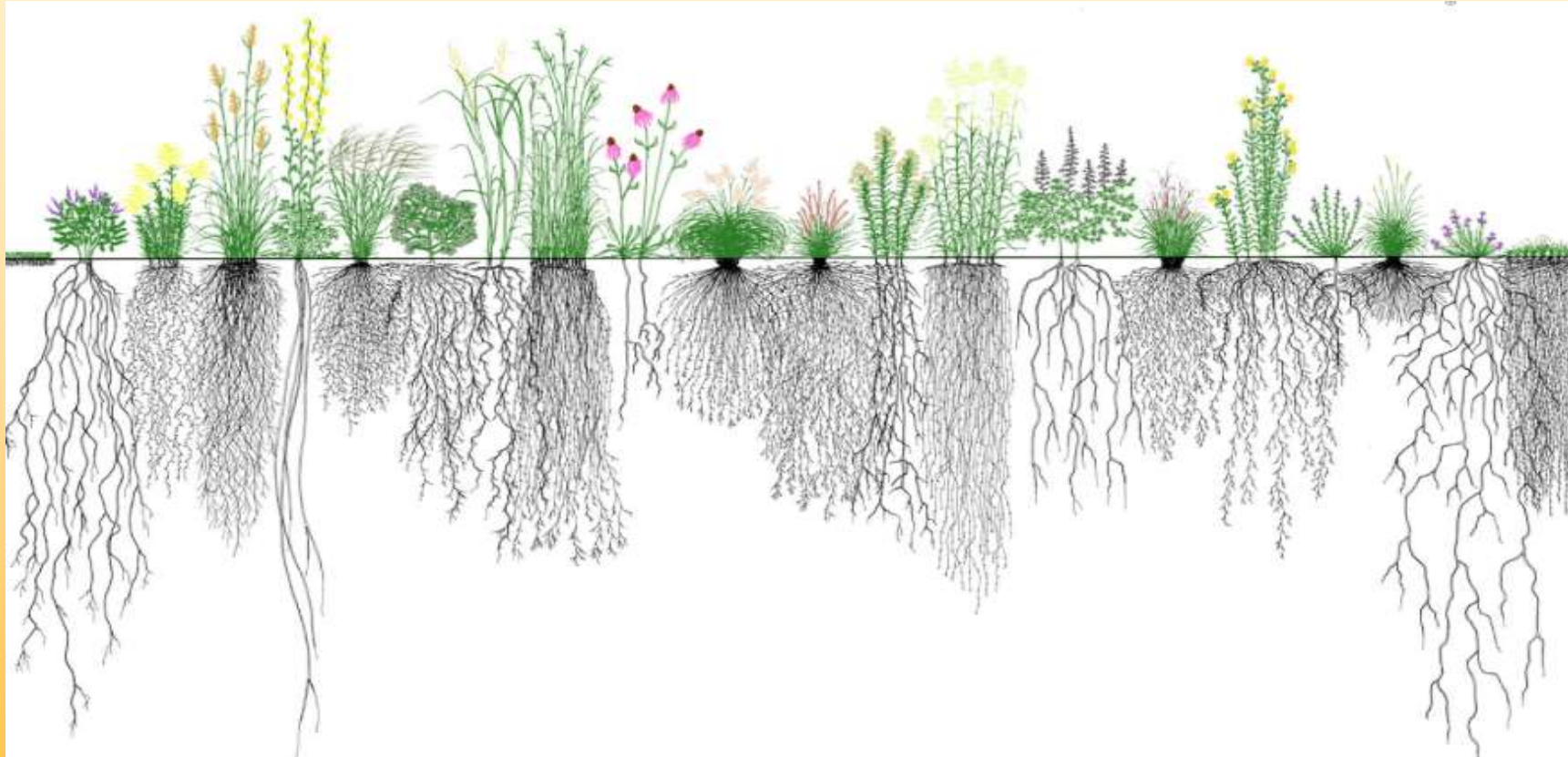
Goal for growing systems

- To sequester and store as much carbon from the atmosphere as we can over the next few decades
- Most food forests will sequester carbon but with certain techniques and options we can maximise this

How?

- Maximise rate and amount of C sequestration in biomass
- Maximise rate of transfer of C from biomass to soil where it is most stable
- Minimise C losses from the system

Decompaction of compacted soils



Decompacted soils store more carbon than compacted soils

Use high density planting using nurse trees/shrubs



Use of Nitrogen-fixers



Maximise resilience to climate change



“I thought you said it was going to get hotter?”

Maximising use of large fast growing trees



Inclusion of especially deep-rooted trees/plants



Trees/branchwood thinnings & plant debris to forest floor/soil surface



Use of woodchip/high C mulches



Maximising use of perennial crops and diversity of species



- Perennials sequester a lot more C than annuals
- Diverse plant assemblages store more carbon (more diversity => more carbon stored)
- Species diversity increases nutrient cycling & depth of cycling
- Tree species diversity promotes soil carbon stability
- Plant diversity increases soil fauna diversity & microbial activity, hastens litter decomposition

Inoculants: bacterial; microbial, mycorrhizal

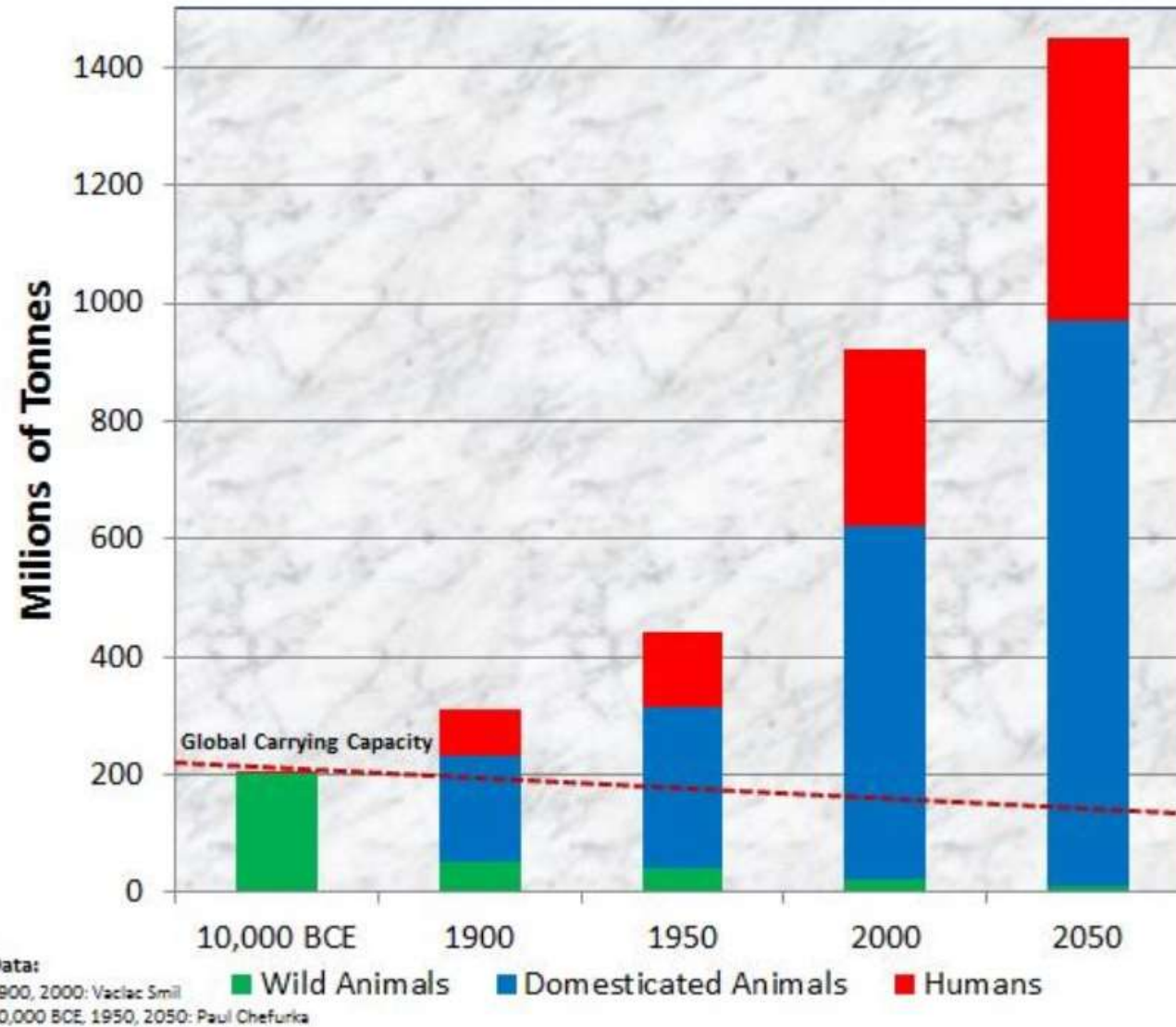


Use of animals in system eg. Birds?



Refs: 31,32,33,34,35,36,37

Terrestrial Vertebrate Biomass



Leave stumps to decompose



Use of swales / terraces



Minimising carbon losses

Site choice – avoid steep sites



Slow water flow in streams and rivers



Windbreaks to reduce wind erosion



Biochar?



Minimal soil disturbance before and during planting



Ground covering plants



Good design of paths & tracks



Reduce use of
soil cultivation



Avoid bare soil - mulch



Avoid chemical stressors



Liming with silicates

Limestone (CaCO_3),
dolomite ($\text{MgCa}(\text{CO}_3)_2$) etc.



X

Olivine / rock dust
($(\text{Mg,Fe})_2\text{SiO}_4$)



✓

Summary

With good choices and techniques, young temperate food forests can sequester 4-5 tonnes/ha/ year of carbon in biomass and soil combined, for several decades.

We should all strive to become carbon negative for the good of the planet (and our own health).

Thank you

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