

Carbon Farming

Winfield Doyleston

Simon Osborne

Family farm Founded 1864F
280 ha arable grain and seed production
170 ha Waterton shallow clay loam
60 ha Temuka clay on clay
50 ha Wakanui & Templeton silt

Crops include



Phacelia



Peas



Linseed



Fescue



Wheat



Ryegrass



Mustard



Oates, Tares & Crimson Clover



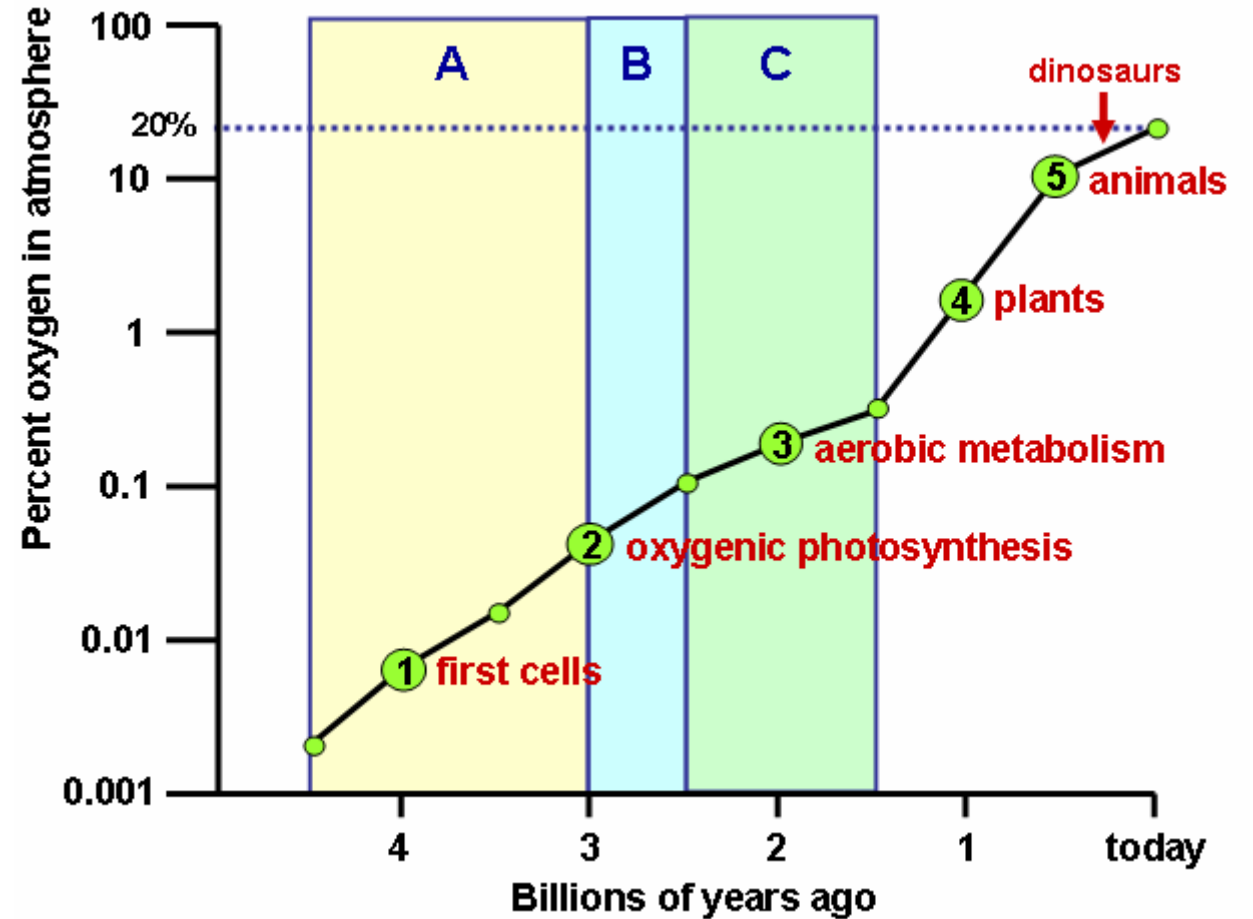
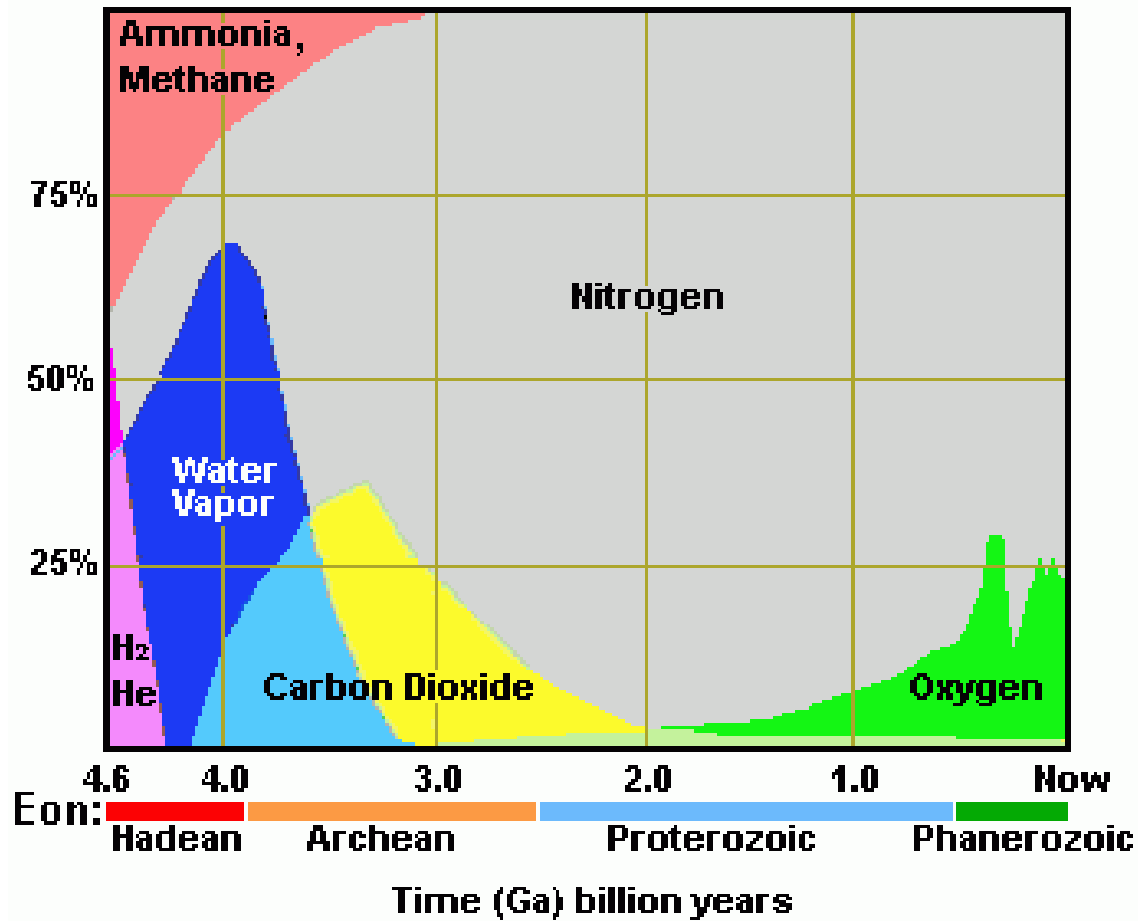
Hybrid Radish

Carbon Farming ?Why?

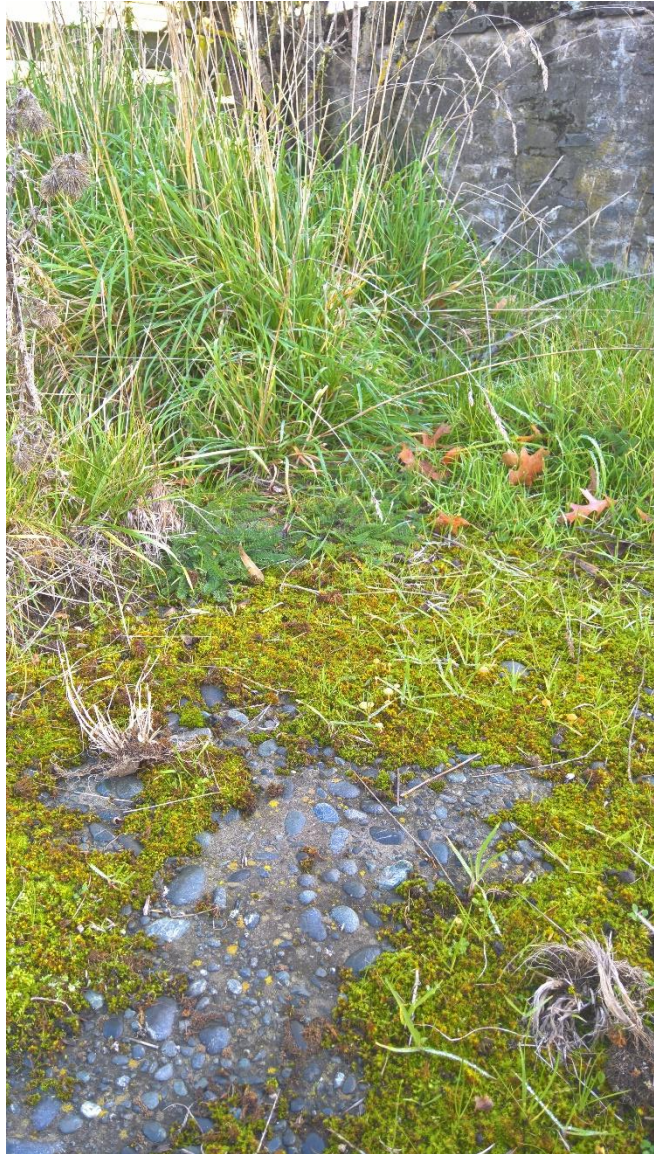


Life Begins

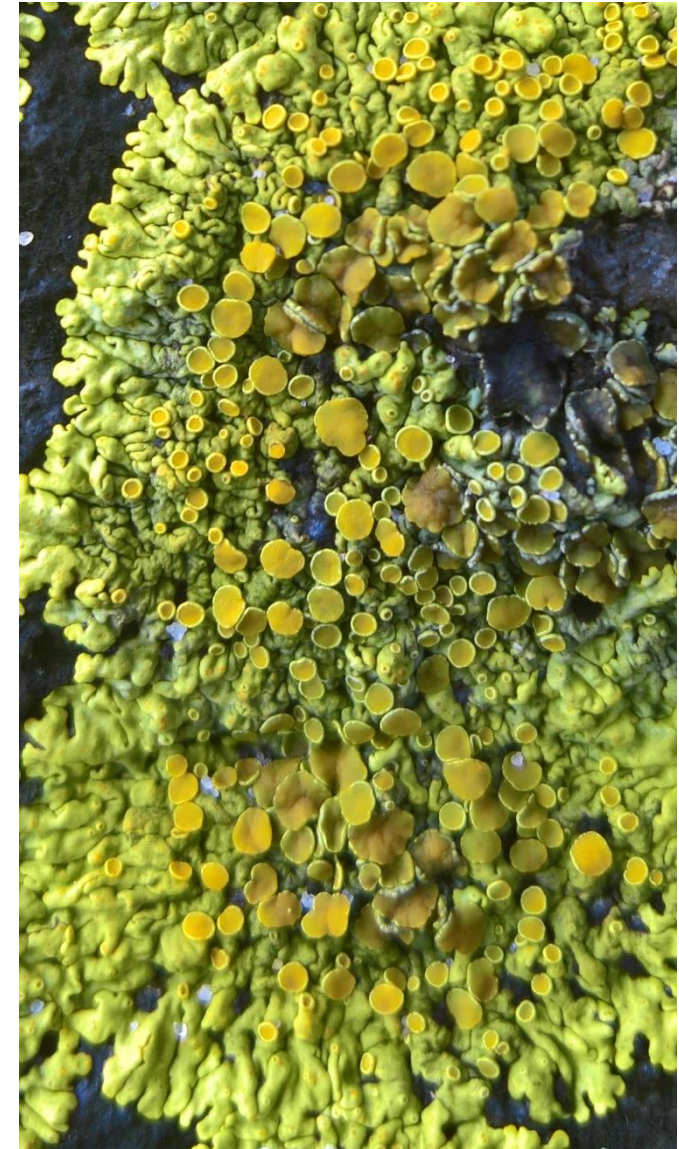
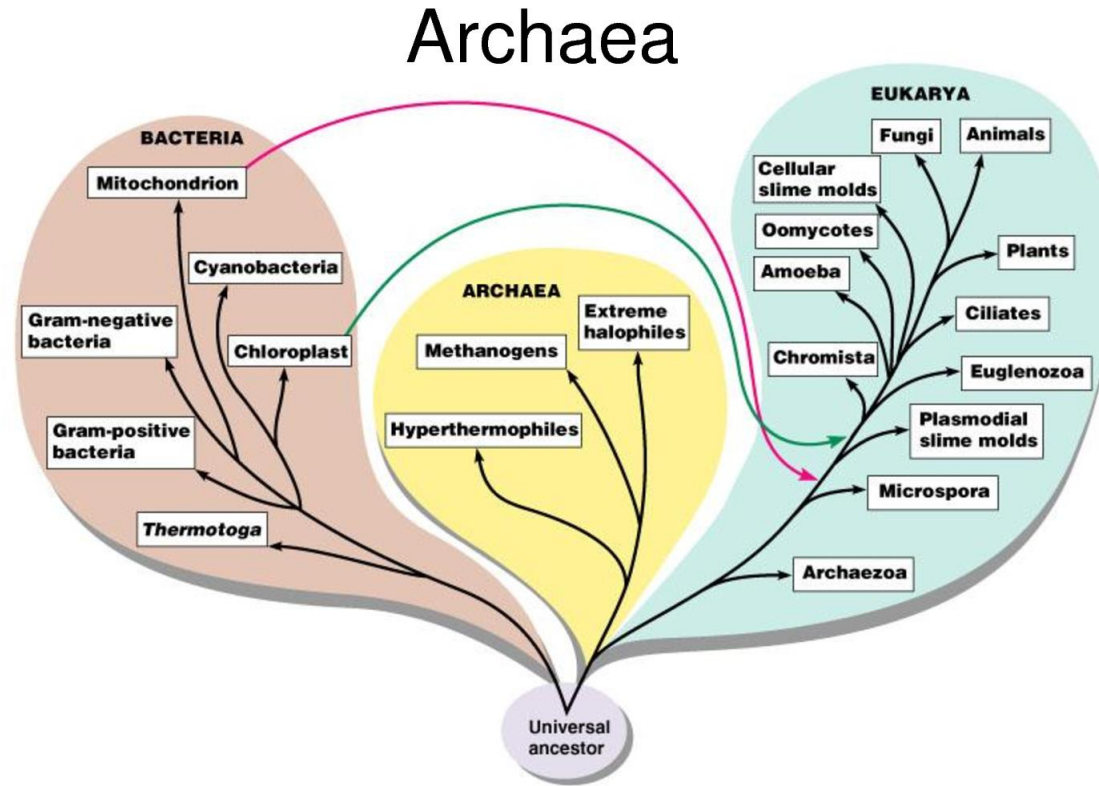
% of Atmosphere Composition of Earth's atmosphere



Life begins on land

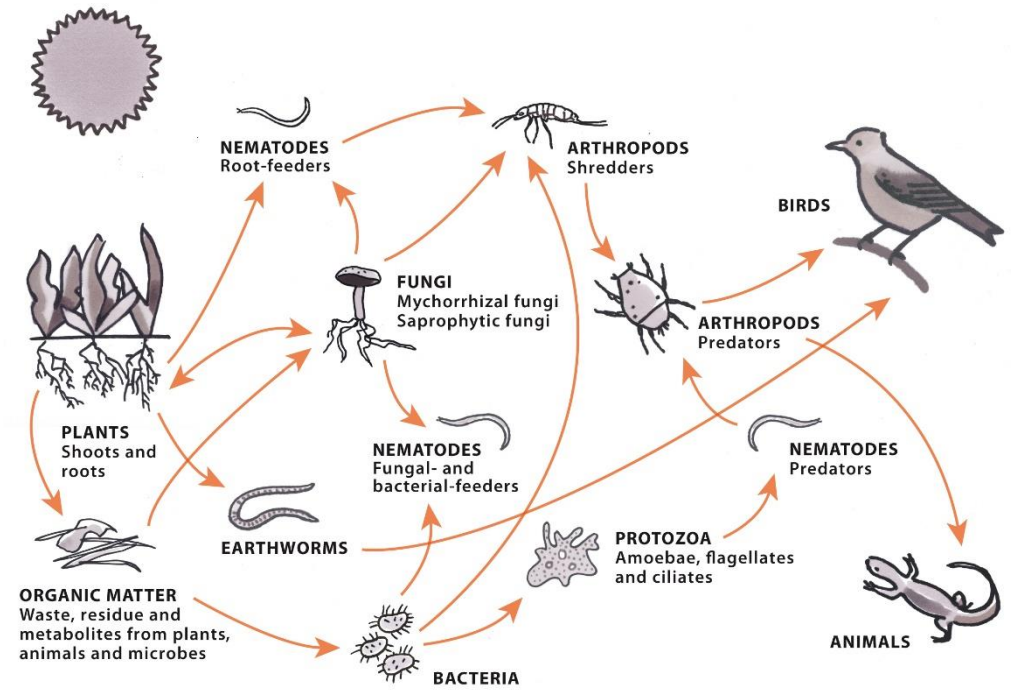


Plant succession

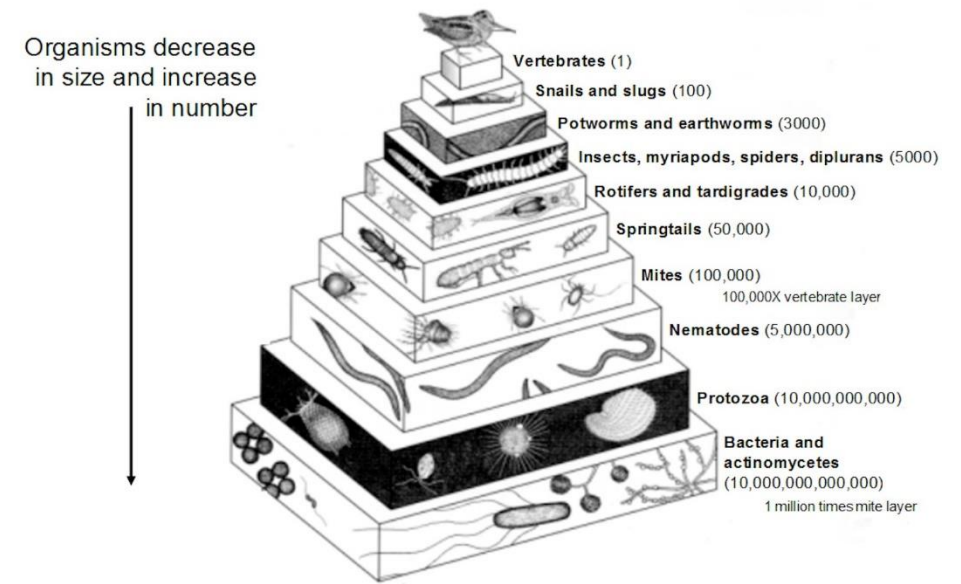


Lichen

Healthy Soil is a complex web of life powered by the Sun and fed by plants

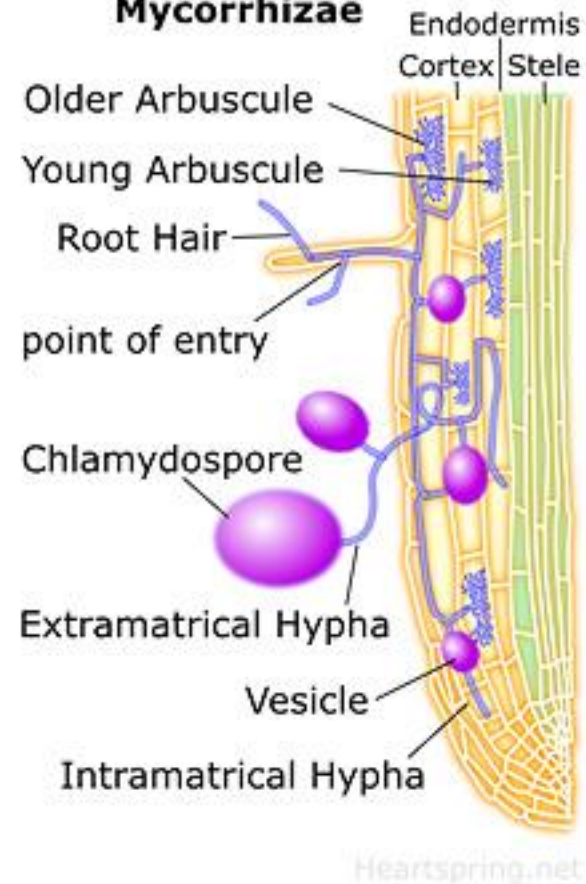


In one square meter of soil....

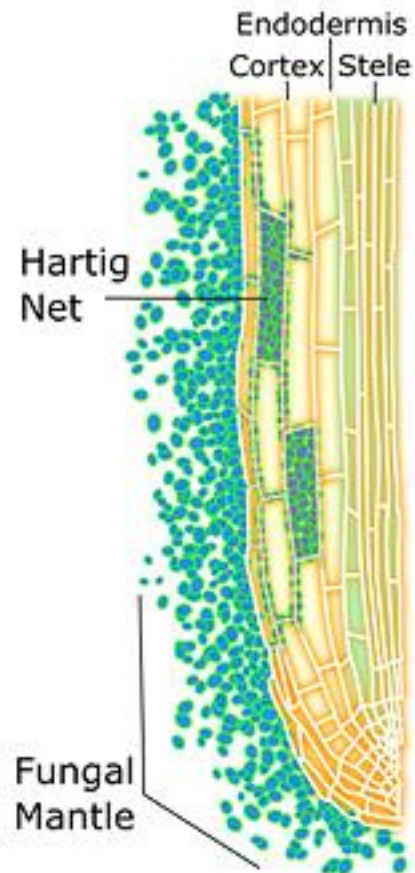


All plants form symbiotic relationships in the soil , 95% of species do so with Mycorrhizal Fungi

Vesicular Arbuscule Mycorrhizae



Ectomycorrhizae



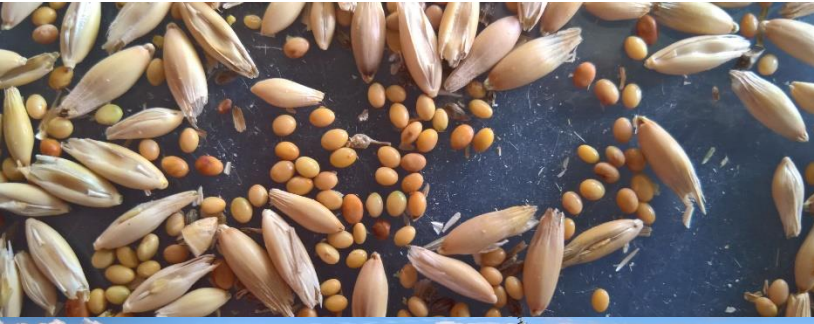
Rhizosphere development critical for nutrition & health



Photo Nicole Masters

Carbon FarmingHow?

Multispecies Cover/Green feed Crops
Mop up excess nutrients
Mobilise bound up nutrients
Build Soil Depth, Biome
Build Soil Carbon



Crop Companion Planting - Pasture Crop



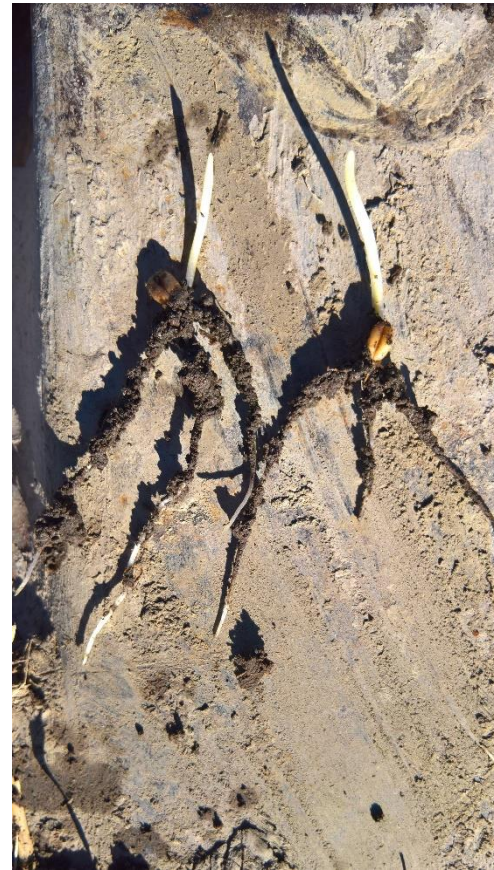
Seed bed Preparation & Residue Management



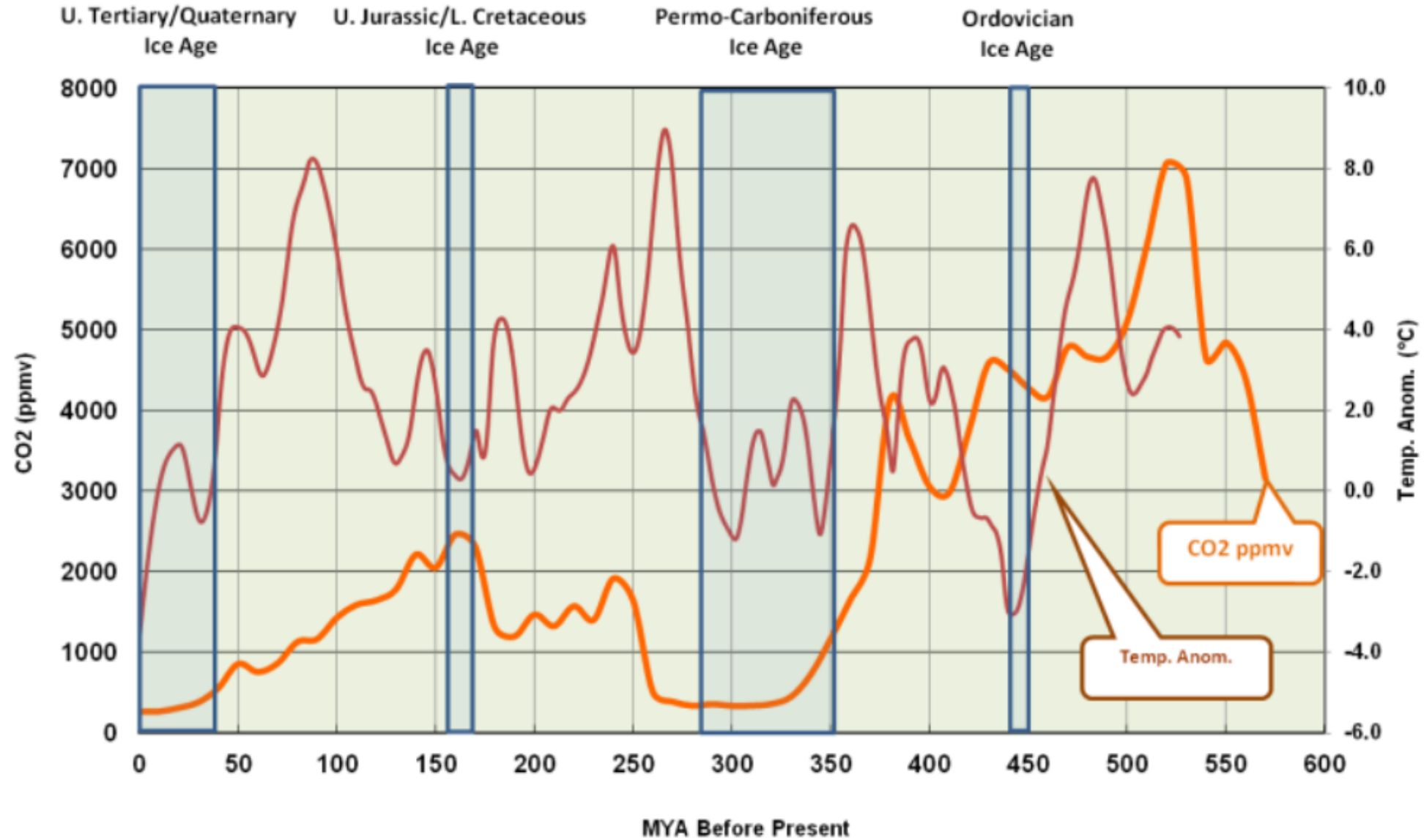
Carbon Storage and labile Carbon

Healthy plants exude carbohydrates from the roots to feed soil microbes which creates considerable biomass some of which ends up as deep stored carbon.

Retained surface plant residue protects the soil surface from wind and water and provides abundant food source for soil organisms. Some Carbon is stored in the upper soil.



Phanerozoic CO2 vs Temperature



— CO2: Berner GeoCarb III — Veizer Temp Anom

CO₂ a warning indicator of global ecosystem damage

