

Our Current Path

Nature is not separate from ourselves nor just available for our use

Underlined items are hyperlinks

Fossil Fuel

use

Industrial Agriculture*

Plowing, inorganic fertilizers, pesticides, feedlots, deforestation, at war with nature
Weed and insect resistance require more-on chemical use
Monocultures & GM patented seeds -> destruction of biodiversity
Pesticide drift threatens organic farmers
10 calories of fossil fuel to produce 1 cal. food energy

Antibiotic use in Agriculture

(1) to fatten up livestock 2x human medicine use
(2) Herbicide Glyphosate (patented antibiotic)
37x human medicine use (U.S. 2017)
Crisis for human health

Soil degradation*

Loss of soil biology, carbon and soil itself
Reduced soil carbon sponge,
less water storage
[Changes to planet's hydrology
Added green house gas emissions
Agricultural collapses & mass migration
Mineral depletion in plants & animals
Health effects

Processed food industry

Addictive high sugar content
and low fiber for long shelf life
Cheaper than real food (crop subsidies)
Industry with highest profit rate of 45%
Processed food diseases (Dr. Robert Lustig)
Big pharma treats symptoms 18% profits
Epidemic of obesity and diabetes

Agrochemical hazards

Nitrate runoff human health hazard
Dead zones in lakes and oceans,
75% of flying insects disappeared
EU ban on Bee-harming pesticides
Glyphosate, most heavily used weed killer in history,
disables Shikimate pathway in bacteria, fungi, non GE plants
Including the bacteria of the human microbiome
Glyphosate probable carcinogen (WHO IARC 2015)
48 EU Green MP's tested for glyphosate in their urine
All test positive, average 17 x EU limit on drinking water.
Strong correlation with rapid growth of chronic diseases
Surg. Neurol. Int. 6, 45, 24-Mar-2015

Global warming greenhouse gases

30 to 60 yrs of farming left*

(UN FAO 2014 and UK Environment Minister 2017)
Lose 7 tons of topsoil for each ton of food produced
Without food our technology is useless

Collapse of Human Civilization

A colossal failure of management based on prioritizing a single variable like profit or growth
Ignores environmental, social & economic complexity

One Alternative Future

Fossil fuel era ended

Revolution in soil biology in last 30 years*

New understanding of the roles of billions of microbes in each teaspoon of healthy soil
Nature's barter system -> plants feed microbes sugar exudates in return for all the other elements they need to grow strong and healthy
World's largest mining operation carried out by fungi mining rocks, sand, silt and clay
New appreciation of Nature's complexity

Retire the Plow*

Plowing causes a lot more soil carbon to be released as CO₂ into the atmosphere*
It slices and dices soil structure built by microbes
Loss of soil structure leads to soil erosion and reduced water infiltration.
Destroys soil fungi which extend plant root area hundreds of times to access nutrients and water

New source of antibiotics

From the 99% of soil microbes not easily cultured
L.L. Ling et al., Nature 517, 455, 2015

Inoculate soil with healthy biology*

Use first class compost or compost extract assessed by soil microscopy
Integrate livestock, nature's mobile biodigesters and biofertilizers

Oceans rebalance emit CO₂

↓
remaining greenhouse gas

Reverse desertification using herbivores*

Not the numbers of herbivores but our failure to manage plant recover time
Nature evolved the grasslands together with vast herds of herbivores (like bison) concentrated by ferocious predators
Forced to keep moving, grass able to recover before being eaten again
Emulate nature: manage plant recovery time using Holistic Planned Grazing, for carbon sequestration, more water infiltration, higher yields, reduced fires
New science on global warming: reduces impact of herbivore methane

Regenerative agriculture*

Soil biology sequesters carbon
rebuilds soil carbon sponge to re-hydrate land to grow more plants -> more transpiration
Improved water cycle provides more cooling to counteract radiative forcing due to remaining excess atmospheric greenhouse gas
Rapidly reverse soil degradation
Important for food security, global warming & chronic disease epidemics

↓
Cooling balances planetary warming

Humanity Flourishes

soil health -> plant health -> planet health -> human health
Humans co-create with Nature
e.g., Holistic Management (Allan Savory 2016)
to address complexity

Credit: UBC Prof Emeritus Phil Gregory (creator of "The Magic of Soil") *