**Vermont Healthy Soils Coalition: VT PES WEBINAR: 10/11/2019**

**Presenters:** Cat Buxton ([www.growmorewasteless.com](http://www.growmorewasteless.com)) and Didi Pershouse ([Didi.Pershouse@gmail.com](mailto:Didi.Pershouse@gmail.com); soilcarboncoalition.org | www.landandleadership.org)

**Background on Presenters:**

Cat Buxton and Didi Pershouse are on the PES Working Group, representing the Vermont Healthy Soils Coalition. They both work with a variety of other land and soil coalitions as well, advocating and educating communities and leaders about healthy soil in Vermont and further afield.

**Key Takeaways:**

* **Soil health**(e.g. increased biodiversity, increased root networks, increased soil carbon) provides a wide variety of ecosystem services such as natural water cycling/storage, nutrient absorption and greenhouse gas absorption through increased photosynthesis
* PES could be an opportunity to measure ES outcomes instead of just impacts/ losses, and to **invest in the prevention of damage** and value based on the avoided costs (e.g. **water infiltration** via good soil health prevents floods could be measured and paid for).
* Pay for each ecosystem service separately, or pay farmers to regrow the natural infrastructure as a whole (e.g. by focusing on overarching soil health)? – this would encompass other ecosystem services, including water quality, that are a focus in VT currently.

**Principles of Soil Health: (Cat)**

* Living roots in the ground, for as long as possible.
  + Grow deep-rooted perennials (can go down up to 15ft) and support photosynthesis that will capture and invest sunlight.
  + Promotes drawdown of carbon into the soil.
  + Rhizosphere of root areas are complex and important to soil health
* Maximize diversity
  + Lots of organisms in the soil, which all play important roles but are not well-studied or well-known. Huge potential to create the conditions for ecosystem biodiversity
* Minimize disturbance
  + Agriculture causes CO2 to escape from cultivated soils and produces methane and nitrous oxide, which are even more potent greenhouse gases.
  + Fertilizer and pesticide use cause negative environmental/water quality effects
* Minimize bare soil
  + Bare soil releases carbon and water, while grassland absorbs carbon and water.
  + More plants mean more photosynthesis
    - can see via normalized difference vegetation index (NDVI)
    - see soilcarboncoalition.org for Landsat satellite imagery of this metric
* Animal contact with the soil
  + Group your animals tighter and move them often to mimic predator effects on grazing behavior and prevent bare soil. Land regeneration can happen quickly, as in Kenya.
* Slow and sink water
  + Minimize flood damage from extreme rain events because healthy soils absorb water
    - Note: lots of variability depending on soil type

**The Soil Sponge Narrative: (Didi)**

* Healthy soil is like a sponge. It absorbs, stores, and filters water, and maintains its structural integrity when wet.
  + Soil carbon is important, but drawdown of carbon can be too abstract for people and also politically divisive, so focus on “soil sponge” aka more pore space
  + Soil sponge absorbs/holds water due to biologically-created pores (eg bread vs flour)
* The “soil sponge”/”soil carbon sponge” is essential infrastructure that makes life on land possible and is biological capital: a foundation for all successful human economies and societies
  + Healthy soil holds together better and reduces runoff (e.g. in rainfall simulators)
  + Concerns over water quality, flooding, drought, local temperature effects, fire protection and so forth all can be improved by soil health
* Humans cannot build the soil sponge, it requires a biological workforce
  + Soil is a living system, with a variety of biological processes at place.
* There are principles to keep it, and its workers, healthy
  + Be guided by soil heath principles, rather than best management practices, because they allow for more innovation and flexibility based on up-to-date knowledge
* This narrative is a broader, more politically acceptable, collaborative and hopeful narrative than current narratives on climate change and water quality, and allows for unanimous/bipartisan consensus