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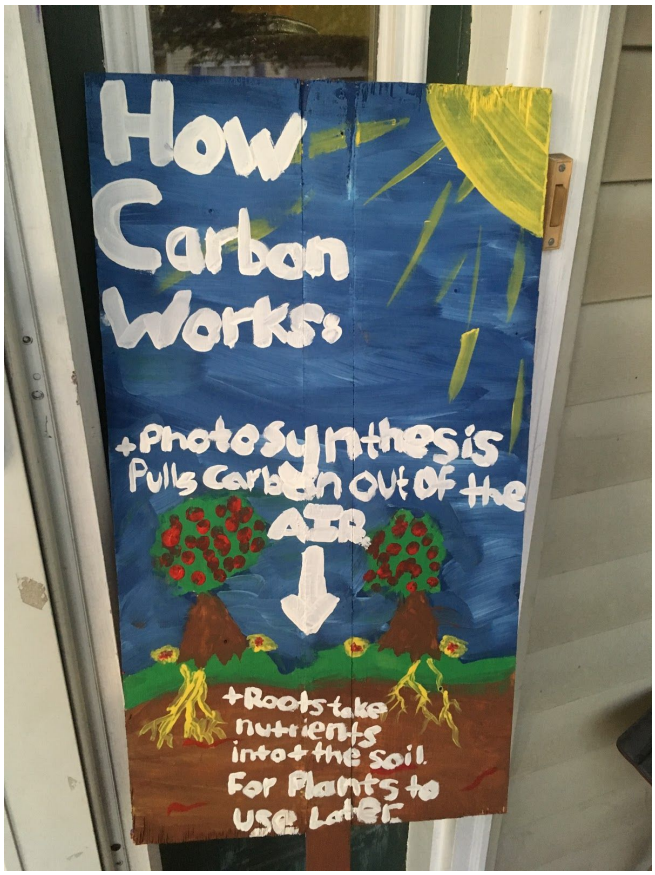
My teaching tool with hopefully go in a place where it will most help teach: an elementary school. I am making a sign that describes photosynthesis, which they will be learning about, on one side, and soil's role in climate change and carbon emissions,and on the other what they can do in their school garden to combat that.

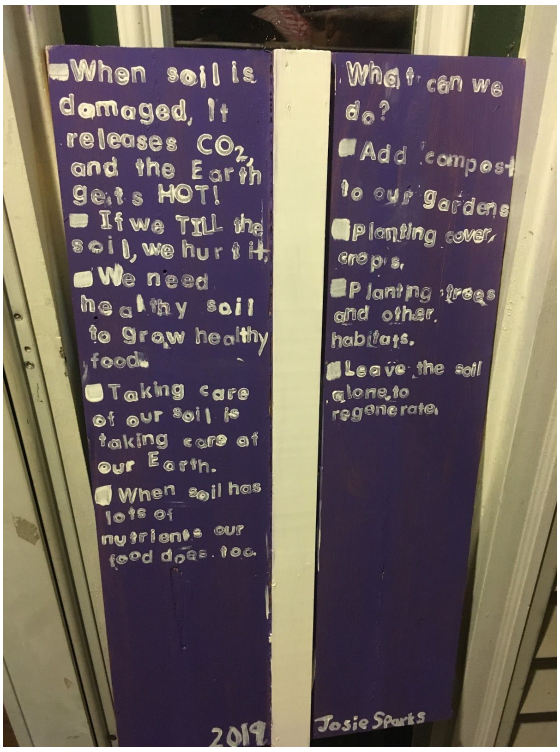
Part of the use of this sign is that it is for young children that haven't been introduced to these concepts yet, so a love of statistics I think are important either don't make sense or have no context to them. Here are some of the statistics I found in my research:



- Soil depth in places such as North Dakota has depleted over half of its resource bank of topsoil.
- We have moved 880,000,000,000 tons of CO_2 into the atmosphere.
- World's soil s have lost 50-70% stored carbon.
- We need stable root systems to hold the soil together, which helps absorb water and reduce run off.
- The US is at a rate of 5.2 tons per acre for erosion of soils, but the soil only replenishes .008 to .51 tons per acre in the same amount of time.
- Monoculture reduces biodiversity and nutrient speciation.
- Damaged soil releases CO_2
- We have only 60 years of topsoil use left if we continue at this rate.
- Photosynthesis captures carbon from the air and pulls it down into the roots
    - Plant uses what is needed and pushes the rest into the soil for storage.
    - Feeded to microorganisms that replenish the soil.
- Nutrient densities in produced food have declined 15-65% in the last 50 years.
- We rely on healthy soil for 95% of what we eat.
- Freench Govt has made pledge to increase soil carbon by .4% each year.
    - If every country could do this done, we could remove up to 75% of global annual emissions.

-solutions-

- Compost adds nutrients and positive feedback loop into soil system.
- Not tilling-keeps root structures in place, reduces watershed chemicals and keeps nutrients in the ground for plants to use later.
- Planting trees and other habitat-available plants.
- Cover crops to replenish varying nutrients
- Planned grazing as intermittent disruption-healthy balance of consumption.



1) https://e360.yale.edu/features/soil_as_carbon_storehouse_new_weapon_in_climate_fight
1) https://www.newhope.com/sites/newhope360.com/files/Organic%20India%20Infographic-v4.jpg
2) https://www.youtube.com/watch?v=QfTZ0rnowcc
3) https://www.youtube.com/watch?v=nvAoZ14cP7Q
4) https://www.youtube.com/watch?v=NxqBzrx9yIE
5) https://rodaleinstitute.org/why-organic/organic-basics/regenerative-organic-agriculture/

Sources^