

*Want to fight climate change?  
Clean up the water?  
Feed the world?*

The secret is in the  
soil!!!!

Clay Pope

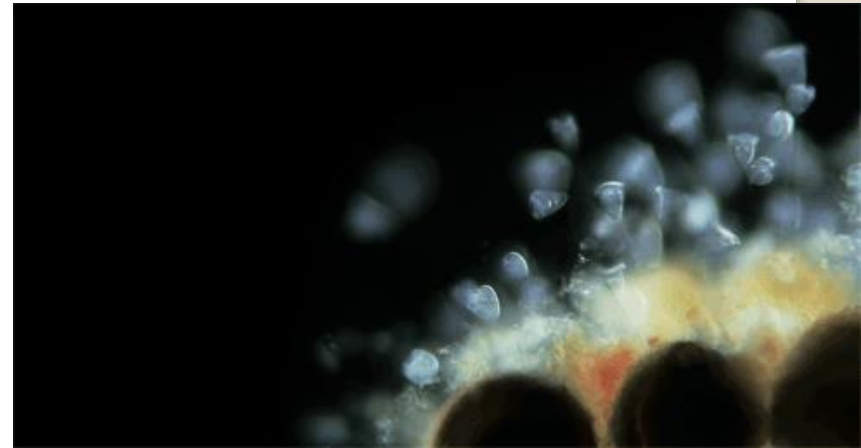
CSP,LLC/USDA Southern Plains Climate Hub



**Its just plain ol' dirt...**



# The soil is alive...



There is more life in a  
teaspoon of soil than  
there are people on  
earth



**The soil is starving, naked  
and has a fever....this is  
not sustainable**

Restoring the health of the soil can play a key role in addressing many of our environmental problems

- We have to adapt or “harden” our agriculture system to climate change
- We need to use what tools we have to help agriculture mitigate climate change
- We have to protect our water, both quality and quantity
- We have to control soil erosion
- We have to help the bottom lines farmers and ranchers
- WE NEED TO INCREASE ORGANIC MATTER

**Why do we need to improve soil health?**

- Organic matter helps hold moisture, helps reduce erosion, and provides food and housing for the sub-soil microbial community
- A 1% increase in organic matter can triple the soil's water holding capacity according to K-State
- A 1% increase in organic matter can make available up to \$700 worth of additional nutrients per acre for growing crops-Ohio State
- This is the best way to harden agriculture to extreme weather events (climate change)

**Why organic matter?**

- 50% to 60% of organic matter is carbon
- Carbon dioxide sucked out of the air through photosynthesis
- No-till can sequester around .5 metric tons of carbon dioxide per acre per year
- No-till uses 3 gallons of diesel less per acre—Oklahoma State
- Great plains ag could be a net zero on green house gas emissions-Proceedings of the National Academy of Science

**We can help mitigate climate change mitigation with organic matter**

- The Same practices that increase organic matter reduce erosion
- In Oklahoma we lose roughly 3lbs of soil for every pound of wheat grown
- Iowa loses 2lbs of soil for every pound of corn
- It takes roughly 500 years for topsoil to form
- Reducing erosion=reducing non-point source pollution

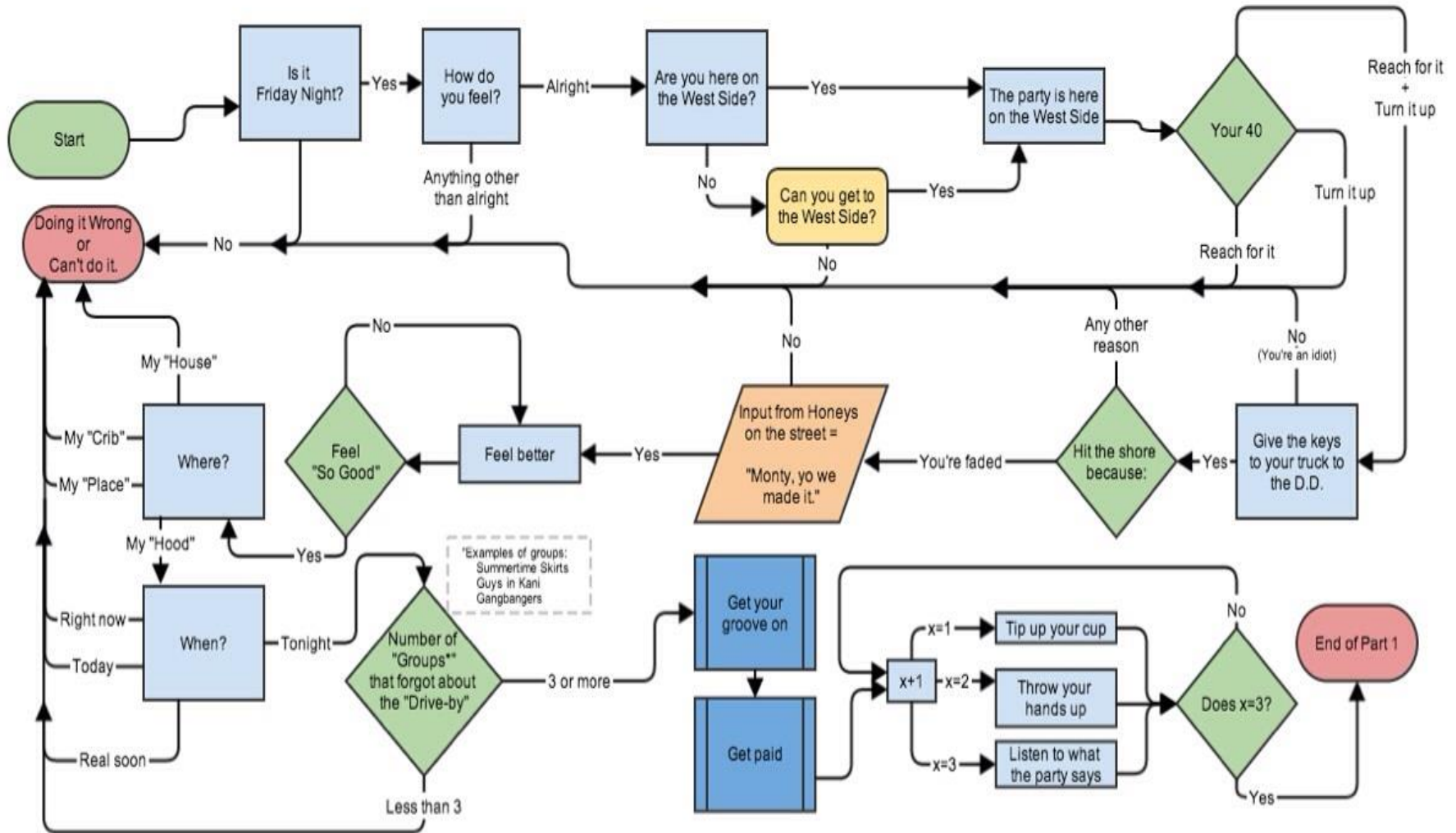
**We have to control erosion**



- Oklahoma has taken nearly 50 streams off the 303d list using the soil health practices of no-till, cover crops, grass plantings, pasture management, riparian restoration
- Oklahoma has enrolled nearly 50,000 acres in a state run carbon sequestration program—equivalent of taking nearly 8 thousand cars off the road
- Most carbon acres also water quality acres
- All done through voluntary, locally-led popular programs—319, NRCS, FSA CREP

**Improving soil health, fighting climate change and protecting water go hand in hand.**

# HOW WE DO IT (PART 1)



- No-till
- Plant cover crops
- Better pasture management
- Plant grass on highly erodible land

**What do we want agriculture to do to improve the health of the soil?**

- No-till
- Plant cover crops
- Better pasture management
- Plant grass on highly erodible land

**What do we want farmers and ranchers to do to “harden” their operation to climate change?**

- No-till
- Plant cover crops
- Better pasture management
- Plant grass on highly erodible land

**What can farmers do to mitigate climate change's causes?**

- No-till
- Plant cover crops
- Better pasture management
- Plant grass on highly erodible land

**What can farmers do to address non-point source pollution?**

- No-till
- Plant cover crops
- Better pasture management
- Plant grass on highly erodible land

**What can farmers do to help wildlife and increase stream flow?**

- Soil health practices should count as carbon offsets under EPA clean air rules
- Any carbon credit purchased on soil health acres in priority watersheds should count as 319 match (already done in region 6)
- In lieu of fines under clean air and clean water act should go toward soil health in priority watersheds
- States and communities should be encouraged to use soil health to address water quality as an alternative to brick and mortar
- Soil health should serve as the basis for sustainable agriculture.
- How we treat the land should be a priority

**EPA and USDA should be working together on these issues.**



- Cleopatra may have bathed in your coffee and Columbus was in diapers when the topsoil started to form
- We have to feed 9 billion people
- Even if you don't believe in climate change you believe in droughts and floods
- There is common ground—we can make a difference
- You don't think man can effect nature? Look at the Dust Bowl—the good news is we stopped it. We can do the same with climate change

**When our resources are gone,  
they're gone.**

- Many of the same practices we want farmers to do to prepare for climate change also fight climate change
- These same practices help address non-point source pollution
- These same practices can help stream flow
- The same practices that help agriculture help our downstream communities adapt to climate change while helping mitigate climate change

**I WANT YOU**



**TO STOP  
FIGHTING!**



# CLIMATE SUMMIT

WHAT IF IT'S  
A BIG HOAX AND  
WE CREATE A BETTER  
WORLD FOR NOTHING?

- ENERGY INDEPENDENCE
- PRESERVE RAINFORESTS
- SUSTAINABILITY
- GREEN JOBS
- LIVABLE CITIES
- RENEWABLES
- CLEAN WATER, AIR
- HEALTHY CHILDREN
- ETC. ETC.

