

Building Resilience into your Farm

Let nature do the heavy lifting!

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Summer 2016



Oct 2020



June 2021: 3-inch rain event

Is your soil biologically active?

Why worry?

2 to 6-inch Rain Events

Flooding/Drought

High winds more often

Very High Temperatures

Super Cold Temperatures

Suicides



www.understandingag.com quote from the article: Invest in Yourself
4/19/2020 By Gabe Brown & Shane New

“...soil samples from 45 farms in the northern plains and prairie provinces.

Samples were taken to a 12” depth.

Both Haney soils tests and total-nutrient extraction tests were done on all samples. The results were surprising. “

“The average pounds of nitrogen across all farms was 4,000!

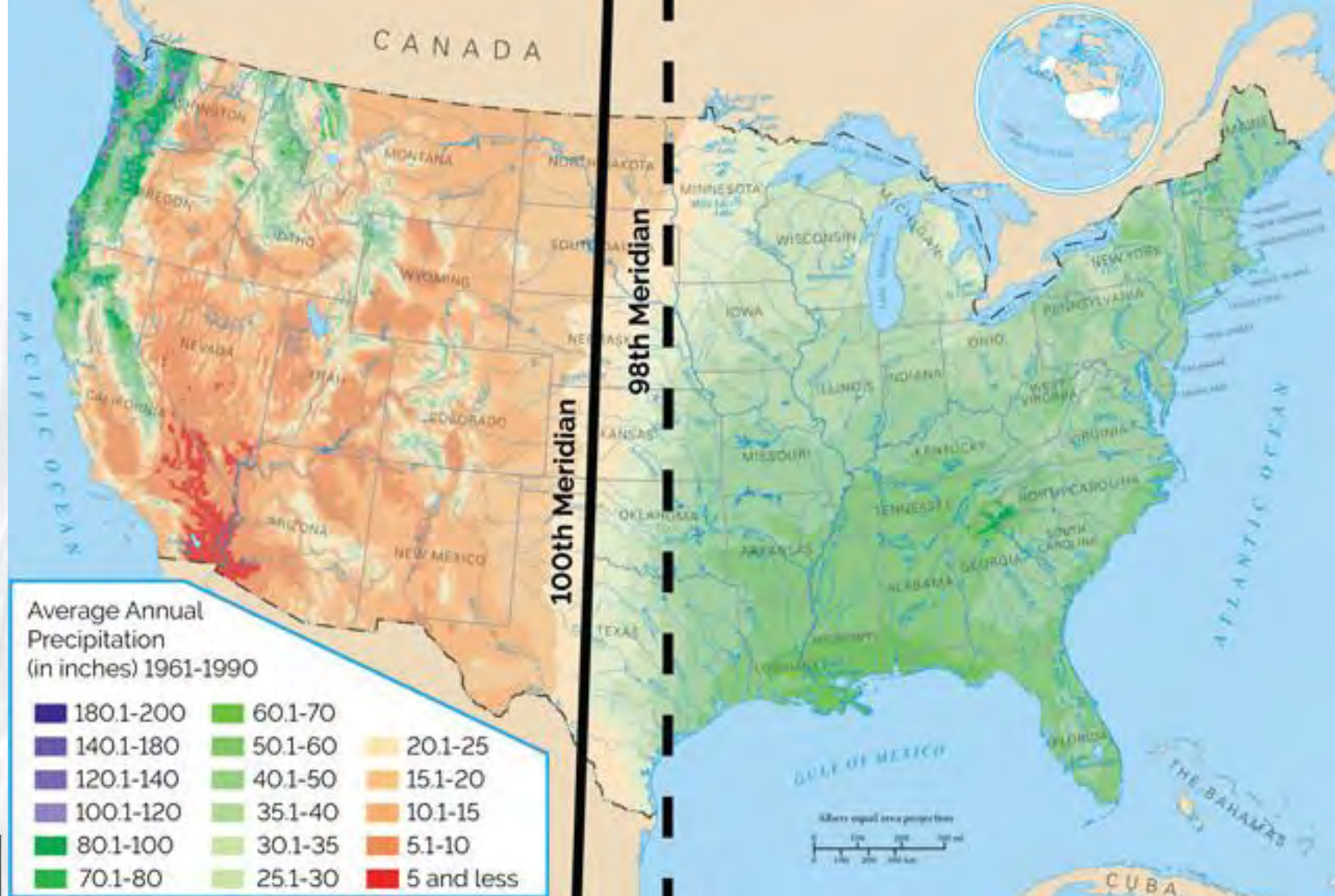
Phosphorus was 1,200#.

Potassium came in at 11,000#. That’s right, read those numbers again.

The least amount of nitrogen on any farm was over 1,000#.”



Approximately
140 mile
change
since 1980



Boundary between the humid eastern United States and the arid Western plains.

The 100th meridian runs from pole to pole, 100 degrees longitude west of the prime meridian in Greenwich, England. It cuts through six U.S. states, forming a partial boundary between Oklahoma and Texas. Powell identified this line as marking the point where the average annual rainfall dropped from 61 centimeters on the eastern edge to 46 centimeters at the western edge. New research shows a sharp aridity gradient still exists, but it's moved east a bit, closer to the 98th meridian. Climate models predict it will move farther eastward in coming decades. Credit: National Atlas, modified by K. Cantner, AGI.



SOIL ENEMY

#1

Tillage is the number one enemy of soil!!

This lets ALL of the carbon out!

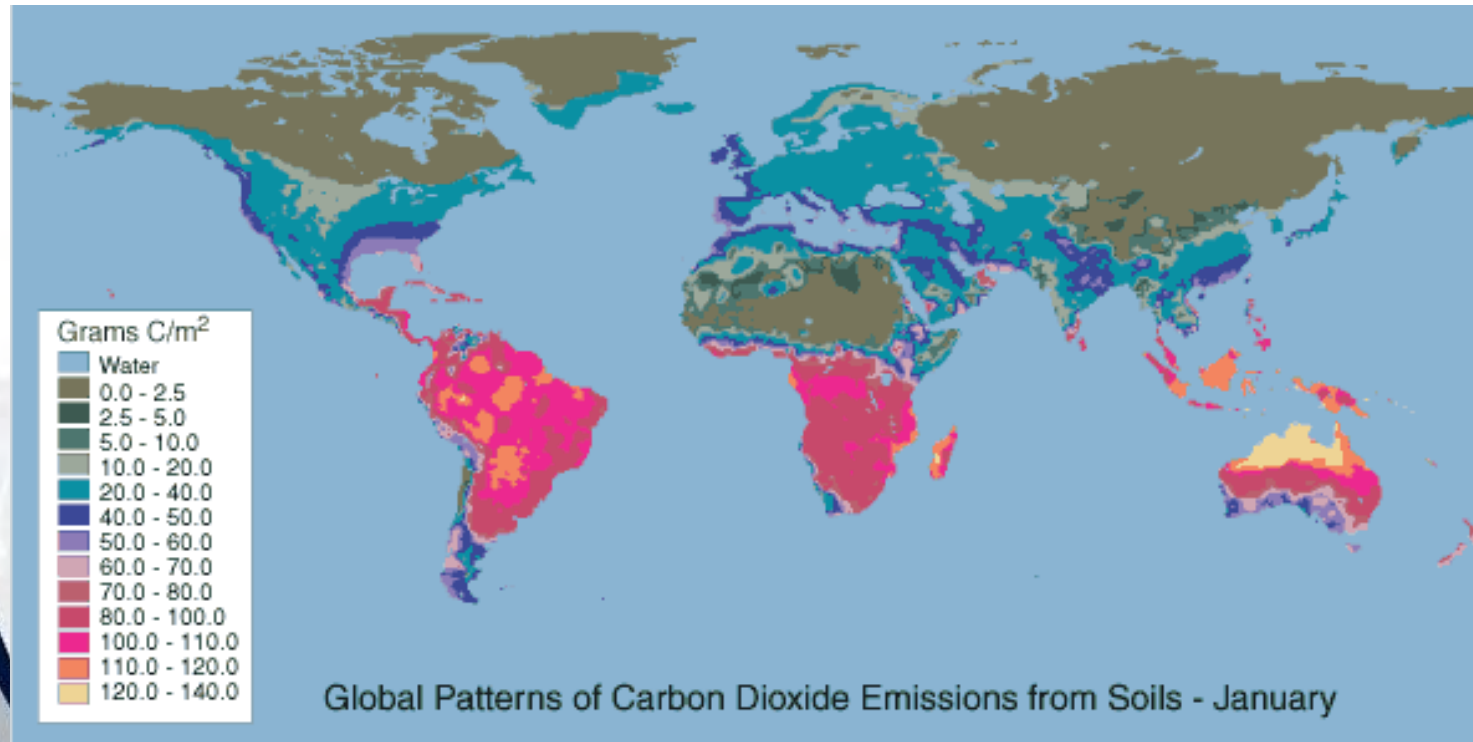
Churns up the mycorrhizal community-takes 6 weeks to recolonize

REMOVES OXYGEN

SMALLER PARTICLE SIZE

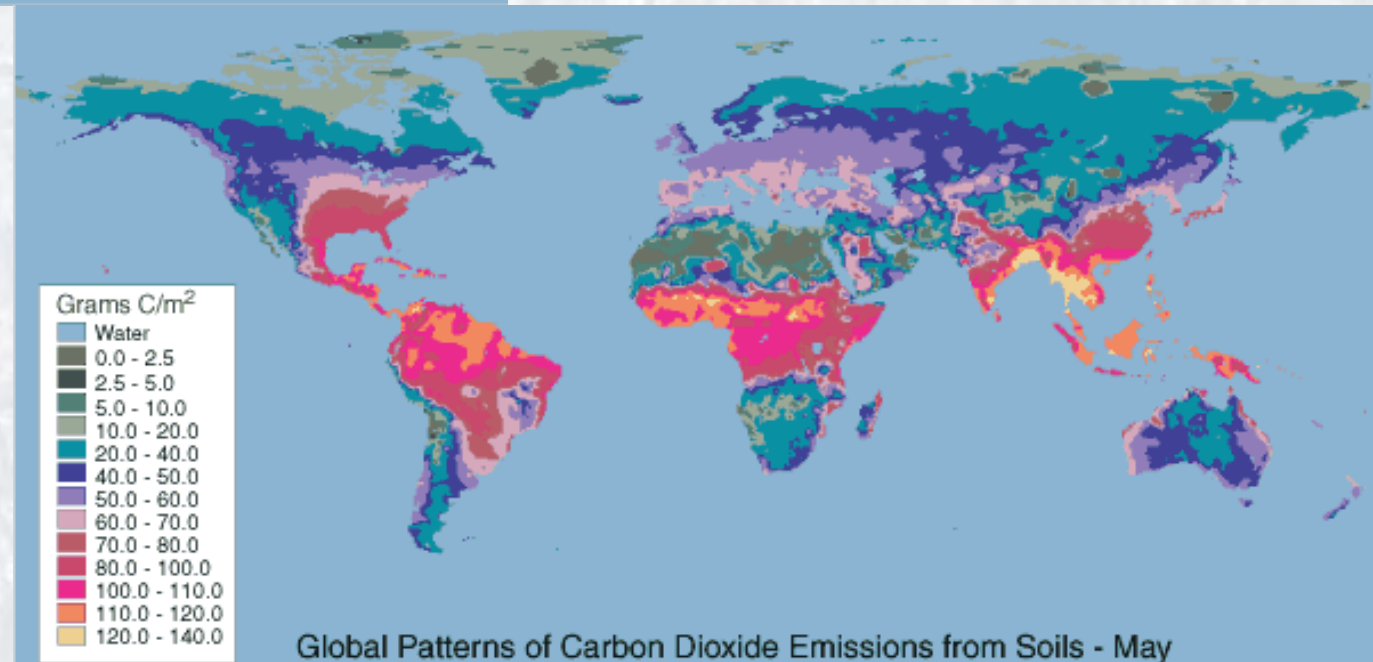
Glomalin- life span of 27 days





Carbon Dioxide Levels up
during growing season

<https://cdiac.ess-dive.lbl.gov/epubs/db/db1015/may.html>



6 PRINCIPLES

Of Soil Health

1



Know your context.

Our soil health practices are a reflection of ourselves and our stewardship of the land.

2



Do not disturb.

In nature, there is no mechanical or chemical disturbance.

3



Cover and build surface armor

to protect the soil's "skin."

4



Mix it up

with a diversity of plants, microbes, insects, wildlife, livestock. Mother Nature did not grow monocultures so why should we?

5



Keep living roots in the soil

as long as possible each year. Roots feed soil microorganisms, which feed our plants.

6



Grow healthy animals and soil together.

Grazing has been an essential component of all soils at one time or another.

Context

Do not Disturb

Keep soil covered

Diversity-plants, animals, microbes, insects

Living roots-all the time

Growing Health-soil, animals, people



Compounding Disruption Diversity



THREE RULES OF ADAPTIVE STEWARDSHIP



DIG A HOLE-look at your soil!!
8 x 8 x 8 inches;
How many earthworms?
What do you see? Chocolate cake texture!!

Get a HANEY TEST

Active Carbon
Potentially Mineralizable Nitrogen
And more



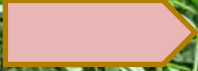
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SEQUESTOR CARBON

Grow Cover Crops



What can cover crops do?

- Change patterns of growth
- Brighten communication between plants
- Encourage nutrient uptake
- Different size/height plants=different length roots
- Mining of different nutrients from different depths
- Bolster winter stockpile

Plant a Ratio 1:1:1 grass: forbs: legumes

Context: Purpose of CC, Goals, Season






- Greg Judy's Farm
- Cows eat top one third of plant and then move again



SARIAH B

- 
1. Plant stops producing Glomalin
 2. Roots Slough off- no photosynthesis
 3. Parasites-sitting on stem waiting to be eaten
 4. Mycorrhizae have no place to live
 5. No shade canopy-high soil temp
 6. Earthworms/soil microbiome need 55-65degrees
 7. All plant communications cease
 8. Reproduction/seed production is lower

<<<<<< Grazed/hay HERE!!YIKES!

Nature cannot DEFEND you when
you have no active biology



FREE ECO-SERVICES

Plants will
remain in
vegetative
growth



<<<<Grazed here
the plant may only
slough off a few
inches of root or root
hairs

THANKS FOR FEEDING the roots and
the biology in the soil
...thanks for the shade too

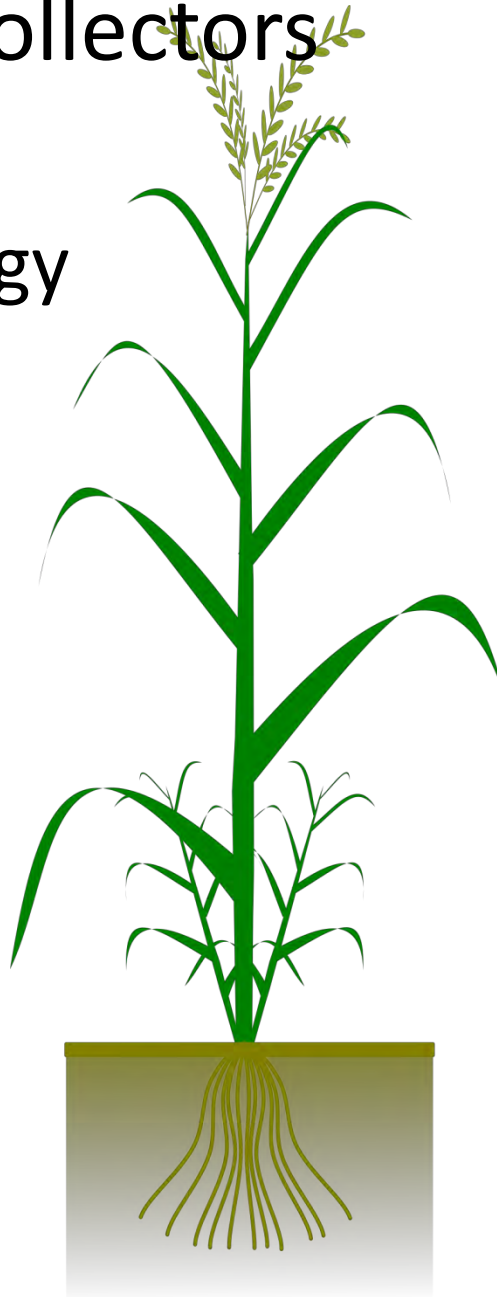


- Plant leaves are solar collectors

- NO leaves = NO Energy

- Rest paddocks/pastures a minimum of 30 days to 60 days- until the tips grow back

24-inch-tall plant =
2 to 10 feet of roots



Anything that falls on,
crawls on,
sprays on
or grows on
your farm should remain there
until harvested /sold

Prevent run-off
Prevent spread of disease
Prevent chemical trespass
Prevent livestock damage
What else can you prevent?
Risk Management
Grow more Grass and trees



While you wait for soils to become biologically active (18 to 24 months)



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use higher quality
minerals
for your livestock



such as Jerry
Brunetti
formulations

Medicinal Hedgerows/ Walls?

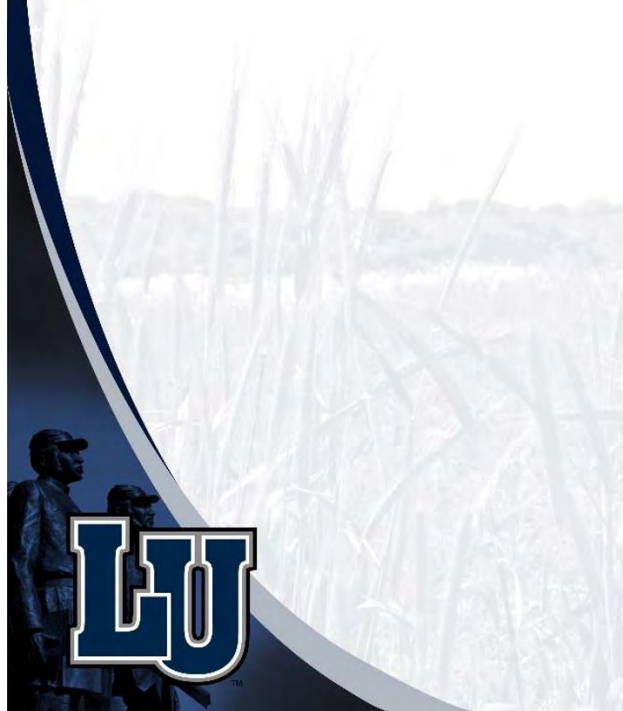


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- Any plant , any tree that is not highly toxic
- Can be used in a medicinal hedge for animal to select

Medicinal hedgerows for Livestock

Kirsten
Robertson
Pecandale
Farm
Greenville, SC

Use livestock panels to enclose the plants- prevent eradication

- Prune/coppice trees to stay same size
- Trees
 - Locust- legume and fix nitrogen
 - Willow-med
 - Oak-tannin
- Add Perennial Herbs & berries-echinacea, elderberry
- Half-fell trees to grow closer to ground-animal harvest of leaves
- Caution on stone pitted fruit trees-cherry-plum
 - Wilted leaves poisonous



- www.Understandingag.com Ray Archuleta youtube videos, Gabe Brown & Shane New -article: Invest in Yourself- 4/19/2020
- Managing Cover Crops Profitably- SARE handbook #9 (pages 62-72) Free Download
- Building Soils for Better Crops-SARE handbook #10, free download
- <https://learn.extension.org/events/1226> Dr Darrell Emmick's webinar-click on Watch the Webinar, when you get to the page of the webinar, scroll down to get the handouts, which you can save on your computer, then watch the video.
- Pasture as pharmacy- <https://extension.usu.edu/behave/htm/current-projects/pasture-project/pasture-as-pharmacy>
- <https://extension.usu.edu/behave/htm/principles>
- Train Livestock to Eat Weeds- <http://www.livestockforlandscapes.com/cowmanagers.htm>
- <https://extension.usu.edu/behave/htm/learning-tools>
- Grass Productivity, Andre Voisin, 1957 (Untoward Acceleration)
- <https://cdiac.ess-dive.lbl.gov/epubs/db/db1015/may.html>

Resilient Agriculture: Cultivating Food Systems for a Changing Climate

by Laura Lengnick

<http://cultivatingresilience.com/>

**We exist on earth at the
amusement of microbes!**

Please FEED THEM!

QUESTIONS??

Thanks for Listening!

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