

AgrAbility Farmers and Ranchers need to work smarter!

**Let the microbes in your soil
take the work out of growing anything!**

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West Central Region, Missouri

Innovative Small Farm Outreach Program

Lincoln University Cooperative Extension

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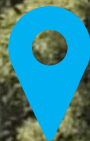
Summer 2016



Oct 2020



June 2021: 3-inch rain event



Sept 2022



Dec 2022

How do you know if your soil is
biologically active?
DIG A HOLE-LOOK at your soil!!
Roots, Earthworms?
What do you see? Chocolate cake texture!!

Get a HANEY TEST

Active Carbon
Potentially Mineralizable Nitrogen
PLFA test
Total Nutrient Digestion Analysis TND



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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-BAD

Glomalin- life span of 27 days

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UnderstandingAg
.com

Regenerative
practices

6-3-4 method

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

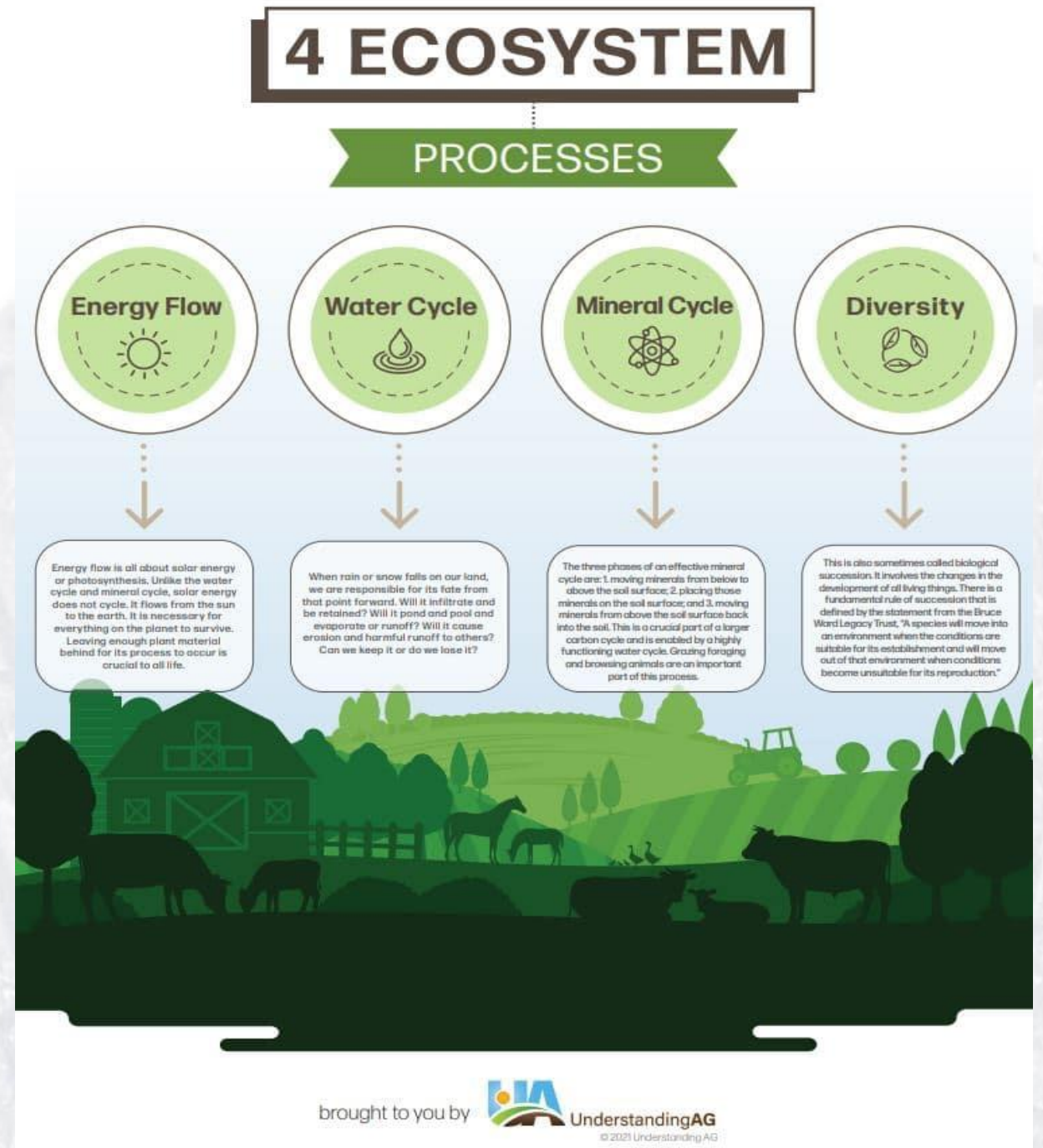
- **Compounding**
- **Disruption**
- **Diversity**



THREE RULES OF ADAPTIVE STEWARDSHIP



- **Energy Flow**
- **Water Cycle**
- **Mineral Cycle**
- **Diversity**





SEQUESTOR CARBON

Grow Cover Crops

What can cover crops do?

- Change patterns of growth=disruption not disturbance
- Brighten communication between plants
- Different leaf shapes collect more solar energy
- Encourage nutrient uptake
- Different size/height plants=different length roots
- Mining of different nutrients from different depths
- Improve diversity of predator insects and birds
- Bolster winter stockpile




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

Context: Purpose of CC, Goals, Season

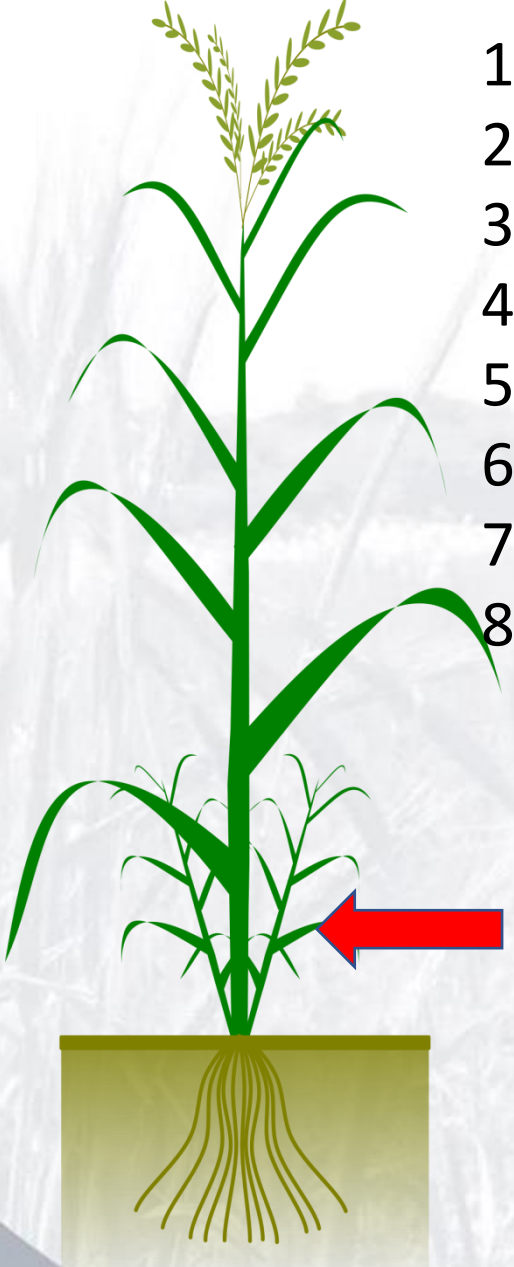
A photograph showing a large herd of brown cows grazing in a field of tall green grass on a hillside. The cows are scattered across the slope, some standing and some lying down, all focused on eating the vegetation. The background is a dense line of green trees under a clear blue sky.

Greg Judy's Farm in Missouri

- Maturing plants have more nutrients
- Animals eat the tender new growth
- Cows eat top one third of plant and move again



Learn to Identify Wild Forbs
Free nutrients, high protein!

- 
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

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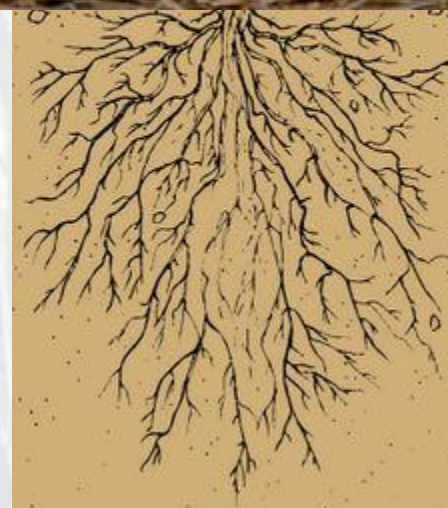


While you wait for soils to become biologically active (18 to 24 months)



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use higher quality
minerals
for your livestock



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such as Jerry
Brunetti
formulations



Planting Vegetables:

**Raised Beds create
no disturbance of soil**

**Grass is cover-crop outside
the bed**



- **No weeds**
- **Tight Spacing,**
- **Use varieties that tolerate heat!**



**Use teff grass
in between rows
Or
Winter wheat in
springtime
-no heading
BUT
Triple rates!**



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Planting Row Crops:

Roll down
cereal
and
plant
into it-
one pass



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**Strip
planting
will feed
main crop
or
protect
from wind**



What can Regenerative Agricultural Practices do for us?

Create a better future for farms and ranches

Resilience is risk management for climate change

Lower the need for buy & apply products, cut costs of inputs

Fewer inputs require less physical labor

Less labor equals less fatigue and stress



RESILIENCE creates ABUNDANCE

Promoting the natural ways of nature encourages biological growth at all levels of life which in turn builds a balance in predator and prey ratios.

**Nature was meant to care for herself;
From the subterranean creatures and microbes
in the soil to the terrestrials that live above
the soil universe!**

We should stop messing it up!



Resources

- <https://extension.usu.edu/behavior/htm/learning-tools>
- Train Livestock to Eat Weeds- <http://www.livestockforlandscapes.com/cowmanagers.htm>
- Grass Productivity, Andre Voisin, 1957 (Untoward Acceleration)
- Resilient Agriculture: Cultivating Food Systems for a Changing Climate by Laura Lengnick
<http://cultivatingresilience.com/>
- The Living Soil Handbook by Jesse Frost
- <https://extension.usu.edu/behavior/htm/principles>
- www.understandingag.com 6-3-4 principles Ray Archuleta youtube videos, Gabe Brown & Shane New
- Managing Cover Crops Profitably- SARE handbook #9 (pages 62-72) Free Download
- Building Soils for Better Crops-SARE handbook #10, free download



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

Please FEED THEM!

QUESTIONS??

Thanks for Listening!

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