REGENERATIVE VINEYARDS

Building the Foundation and A Successful Transition

Chuck Schembre

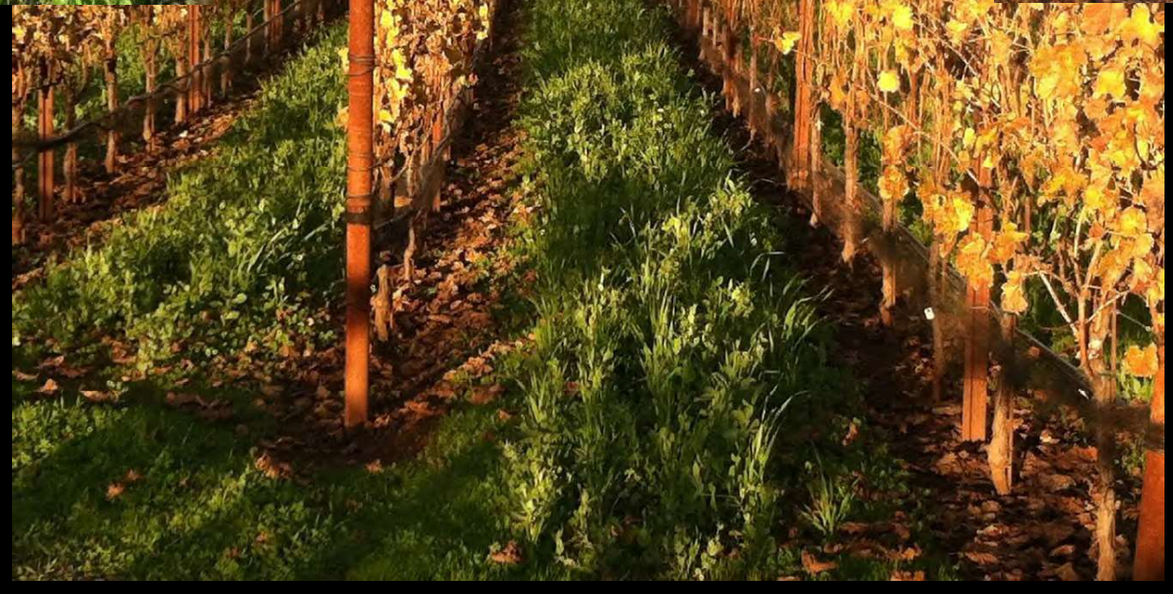
Regenerative Ag Consultant

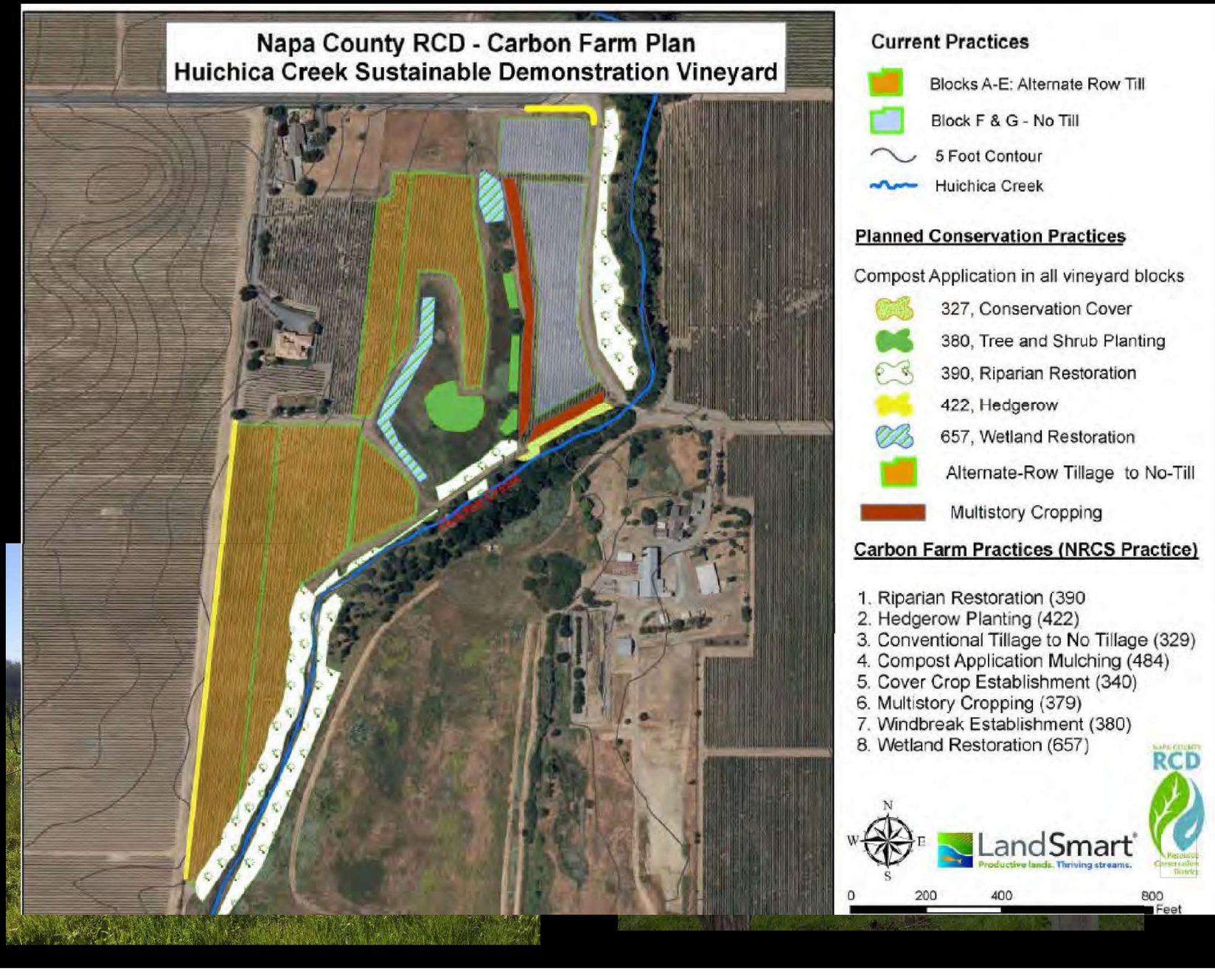
Orchards | Vineyards | Vegetables

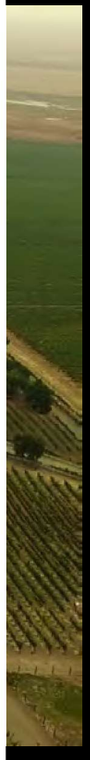
Certified Professional Soil Scientist

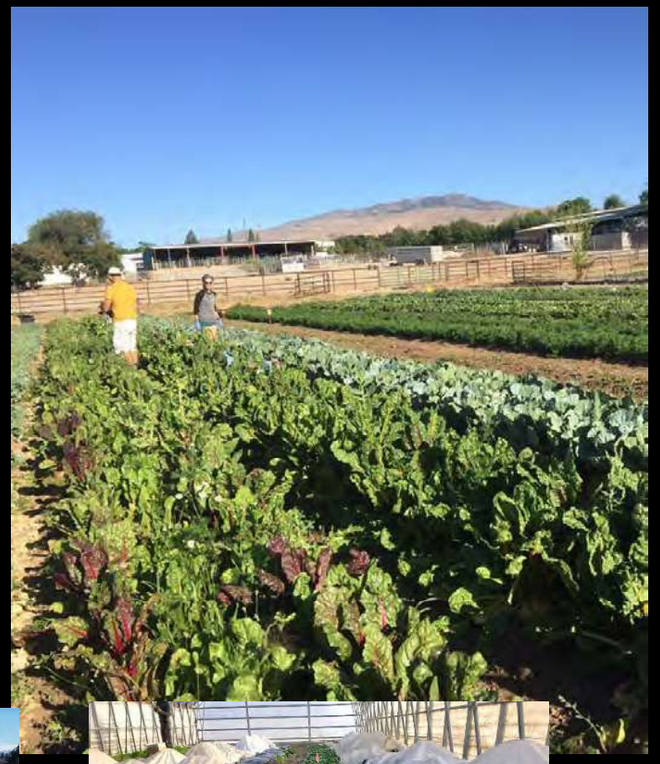
UnderstandingAG

A BIT ABOUT CHUCK




Napa County RCD - Carbon Farm Plan
Huichica Creek Sustainable Demonstration Vineyard
Current Practices
Blocks A-E: Alternate Row Till
Block F & G - No Till
5 Foot Contour
Huichica Creek
Planned Conservation Practices
Compost Application in all vineyard blocks
327, Conservation Cover
380, Tree and Shrub Planting
390, Riparian Restoration
422, Hedgerow
657, Wetland Restoration
Alternate-Row Tillage to No-Till
Multistory Cropping
Carbon Farm Practices (NRCS Practice)
1. Riparian Restoration (390
2. Hedgerow Planting (422)
3. Conventional Tillage to No Tillage (329)
4. Compost Application Mulching (484)
5. Cover Crop Establishment (340)
6. Multistory Cropping (379)
7. Windbreak Establishment (380)
8. Wetland Restoration (657)
N
W
E
S
LandSmart
Productive lands. Thriving streams.
RCD
0
200
400
800
Feet





DFI
DESERT FARMING INITIATIVE

SOIL HEALTH ACADEMY™

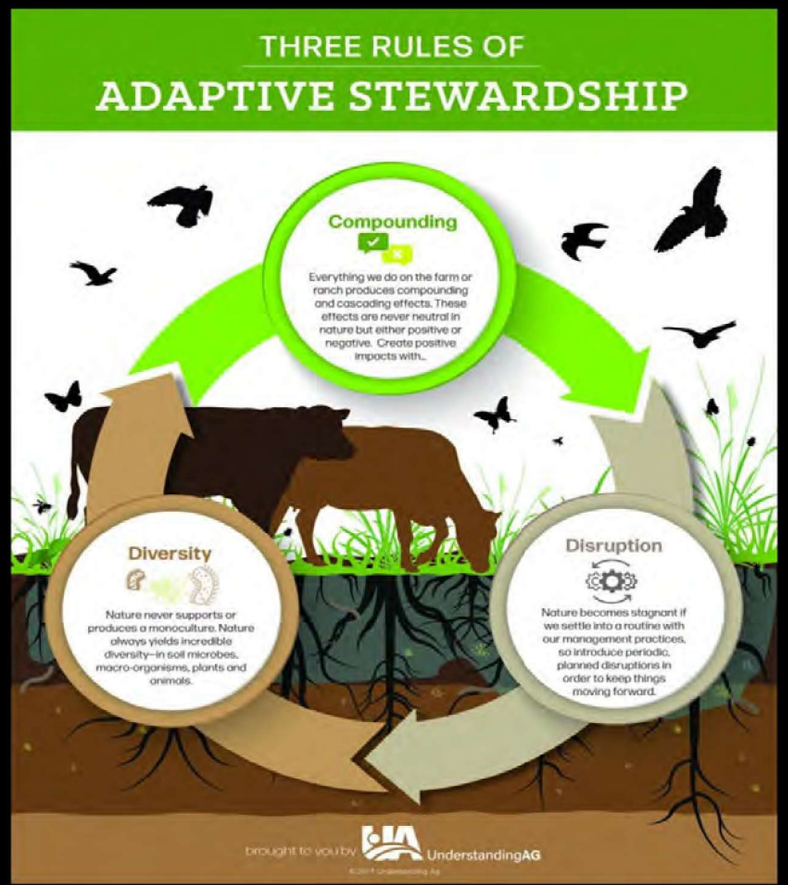
UnderstandingAG™

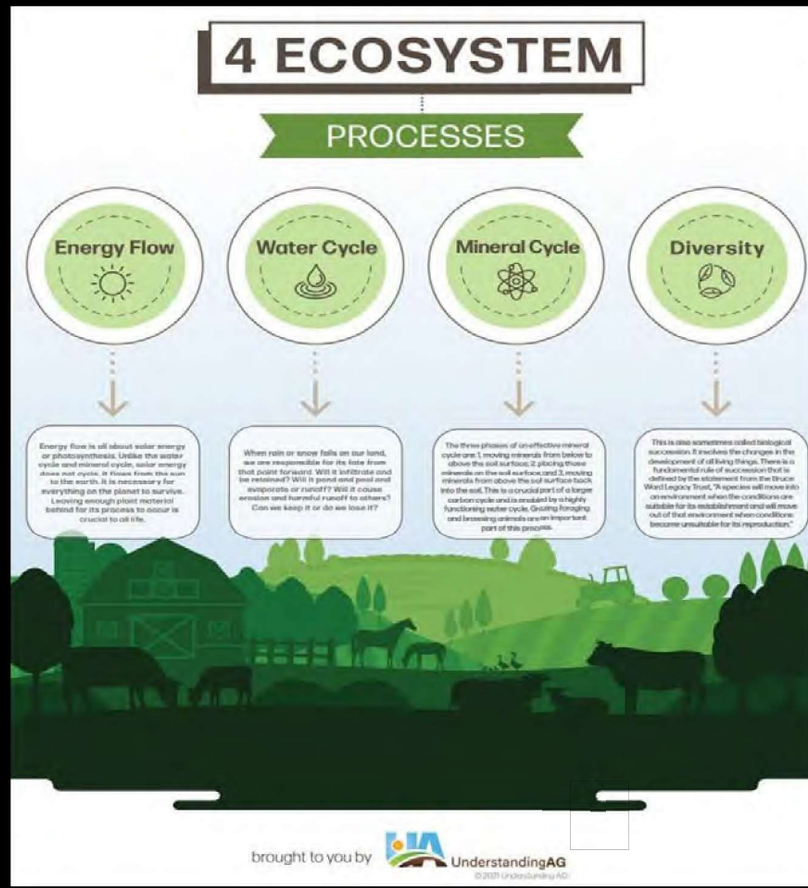
HIGH DESERT HARVEST

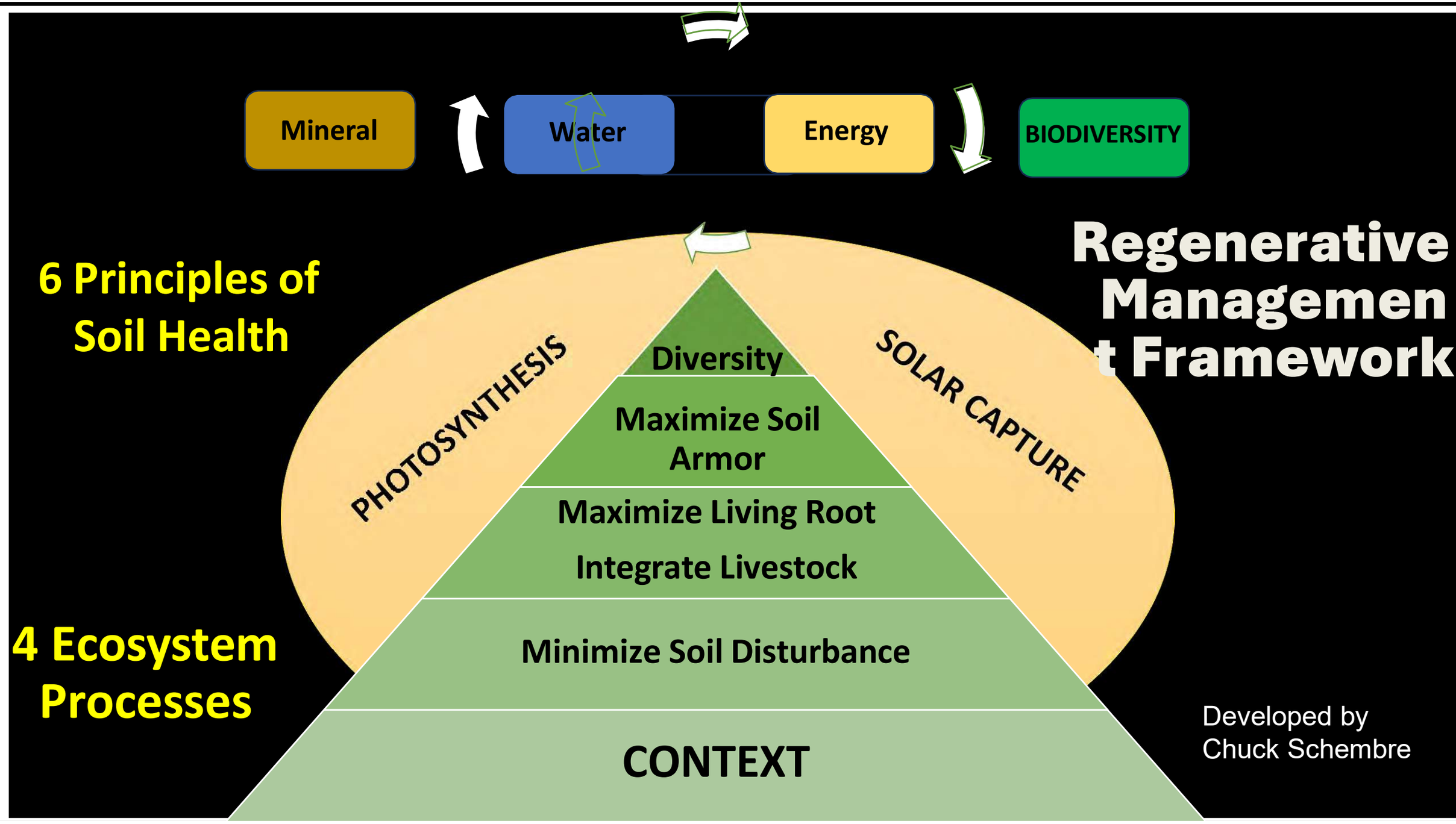
The 6-3-4™

UnderstandingAG

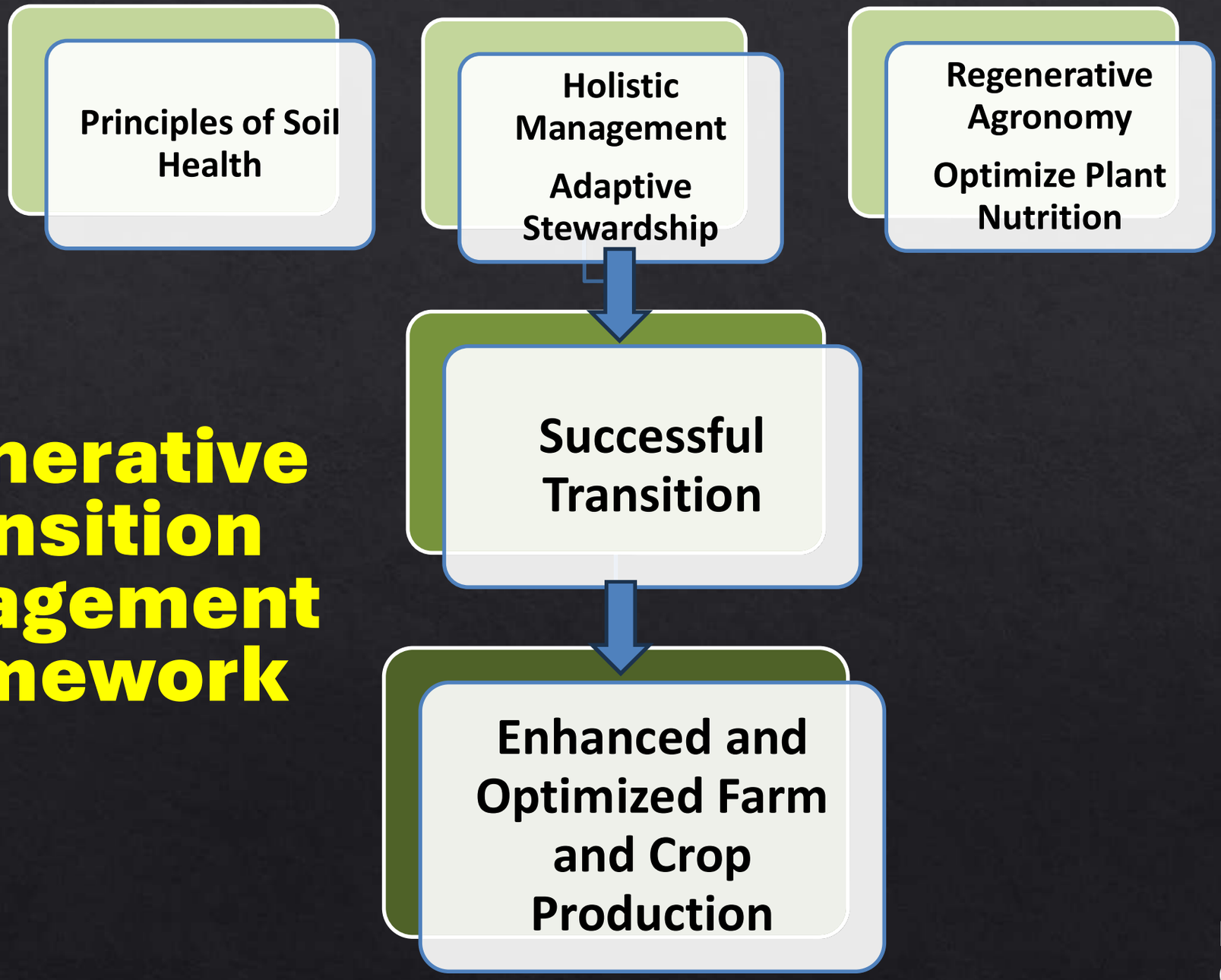
Understanding AG's Regenerative Model






Mineral
Water
Energy
BIODIVERSITY
Regenerative Management Framework
6 Principles of Soil Health
PHOTOSYNTHESIS
SOLAR CAPTURE
Diversity
Maximize Soil Armor
Maximize Living Root
Integrate Livestock
Minimize Soil Disturbance
CONTEXT
4 Ecosystem Processes
Developed by Chuck Schembre

Regenerative Transition Management Framework



Developed by
Chuck Schembre

BUILDING HEALTHY FUNCTIONING SOIL

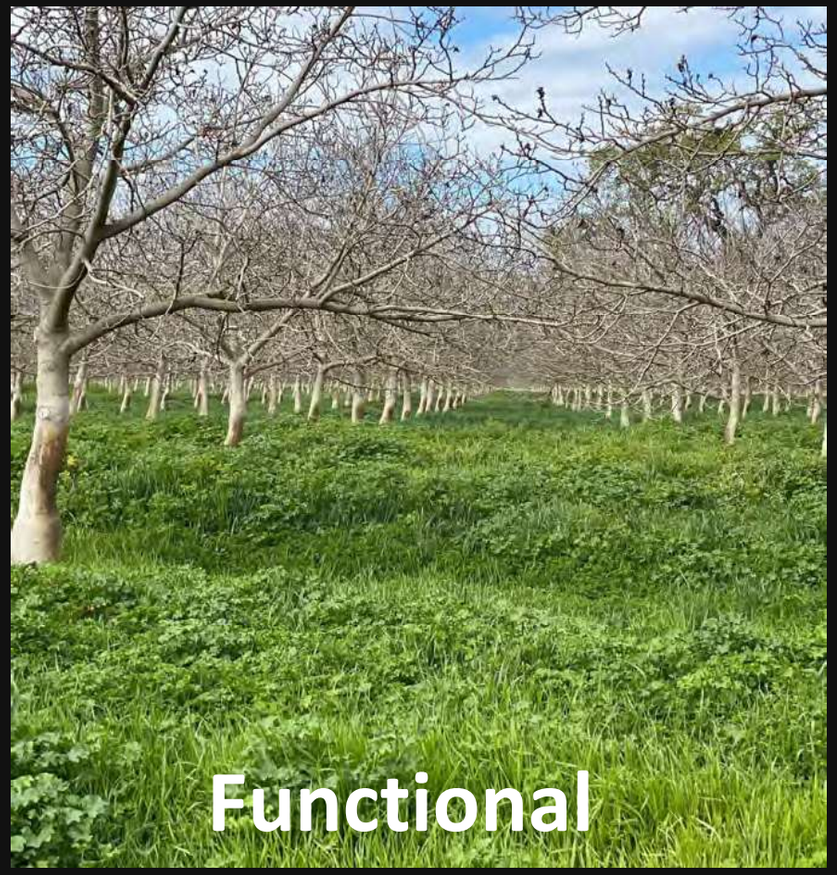
What is a Functional Soil?

ABILITY TO:

Capture, Store & Cycle

1. Water
2. Gases
3. Nutrients

Broken Water Cycle



Water Infiltration problems are man-made

California Central Valley, Winter 2023

SOIL HEALTH ACADEMY®

UnderstandingAG

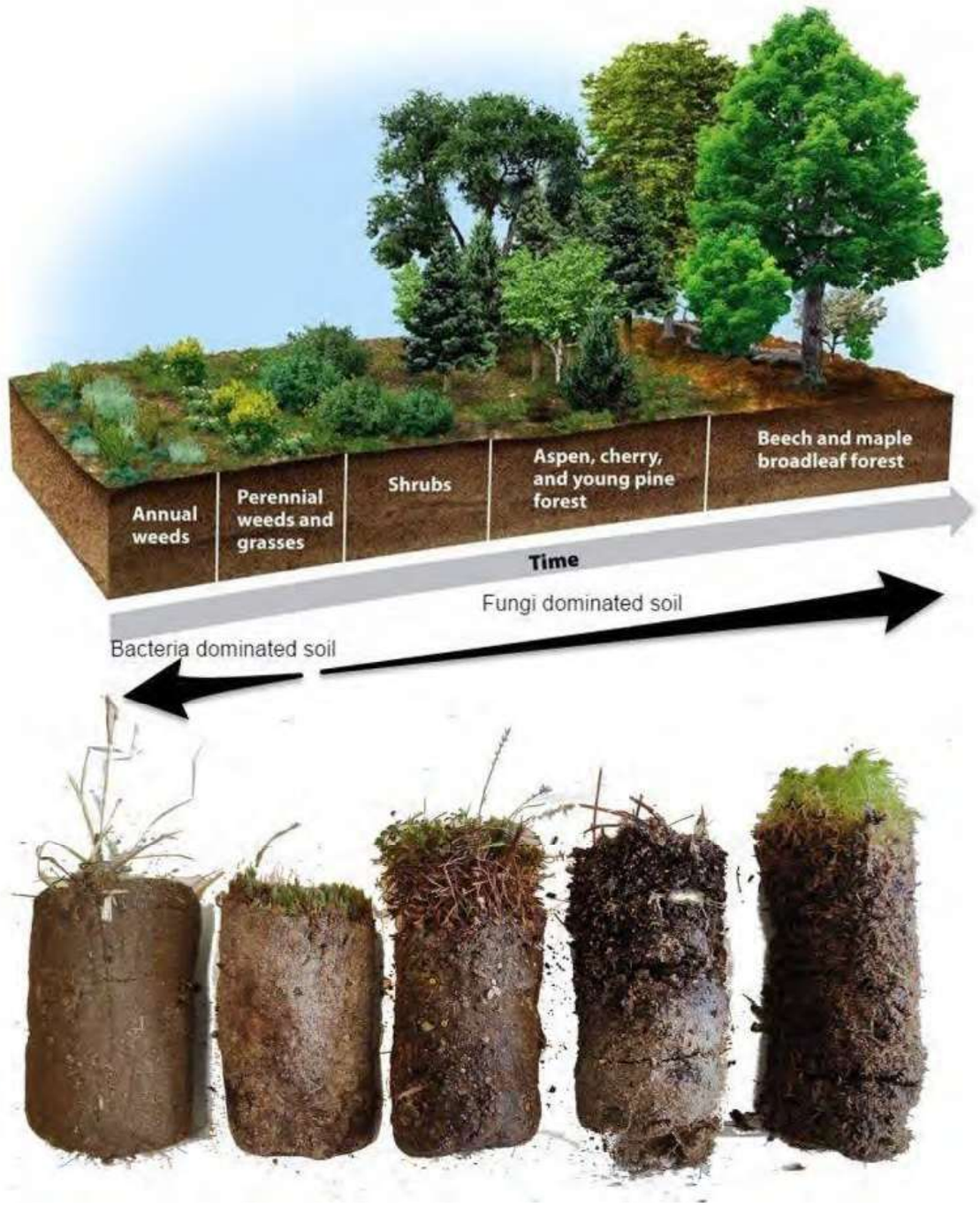
Comparing Two Fields

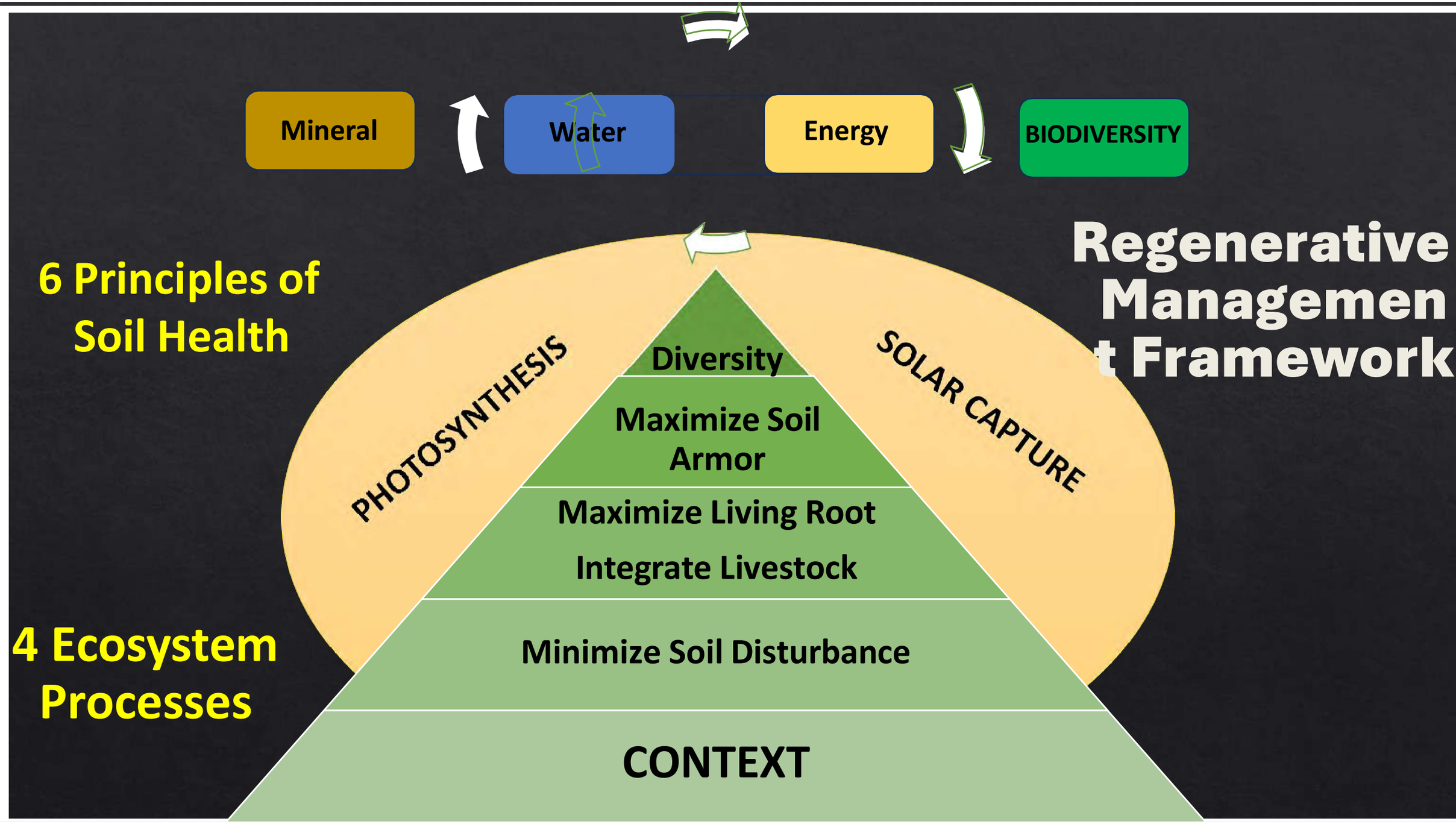
MIMIC NATURES DESIGN

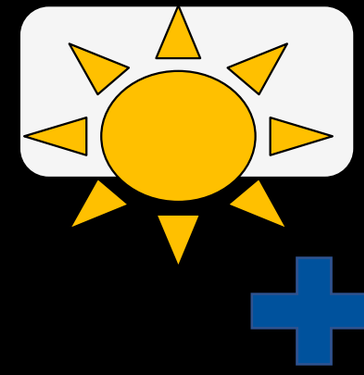
PERENNIAL CROPS THRIVE IN A SOIL ABUNDANT WITH FUNGI

CONTINUOUS FLOW OF DIVERSE SOURCES OF ORGANIC MATTER

UnderstandingAG




Mineral
Water
Energy
BIODIVERSITY
Regenerative Management Framework
6 Principles of Soil Health
PHOTOSYNTHESIS
SOLAR CAPTURE
Diversity
Maximize Soil Armor
Maximize Living Root
Integrate Livestock
Minimize Soil Disturbance
CONTEXT
4 Ecosystem Processes

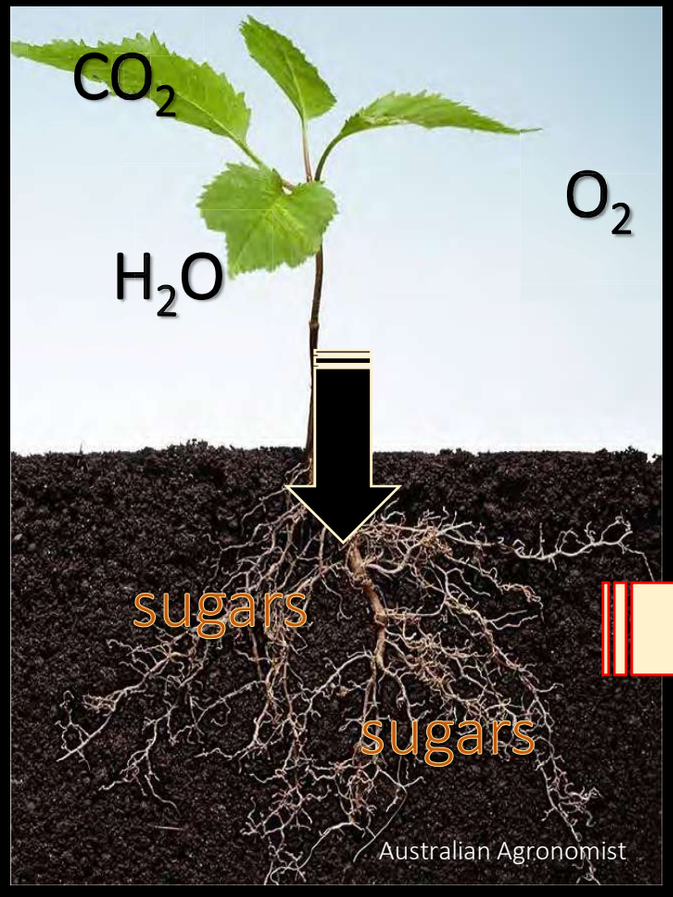


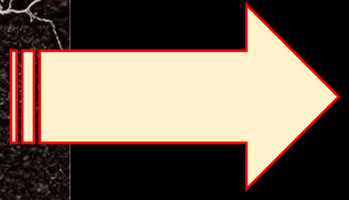
Photosynthesis
The Soil Health Driver

1. **Solar Energy Flow**
2. **Liquid Carbon Pathway**

Creates a biological hot spot:

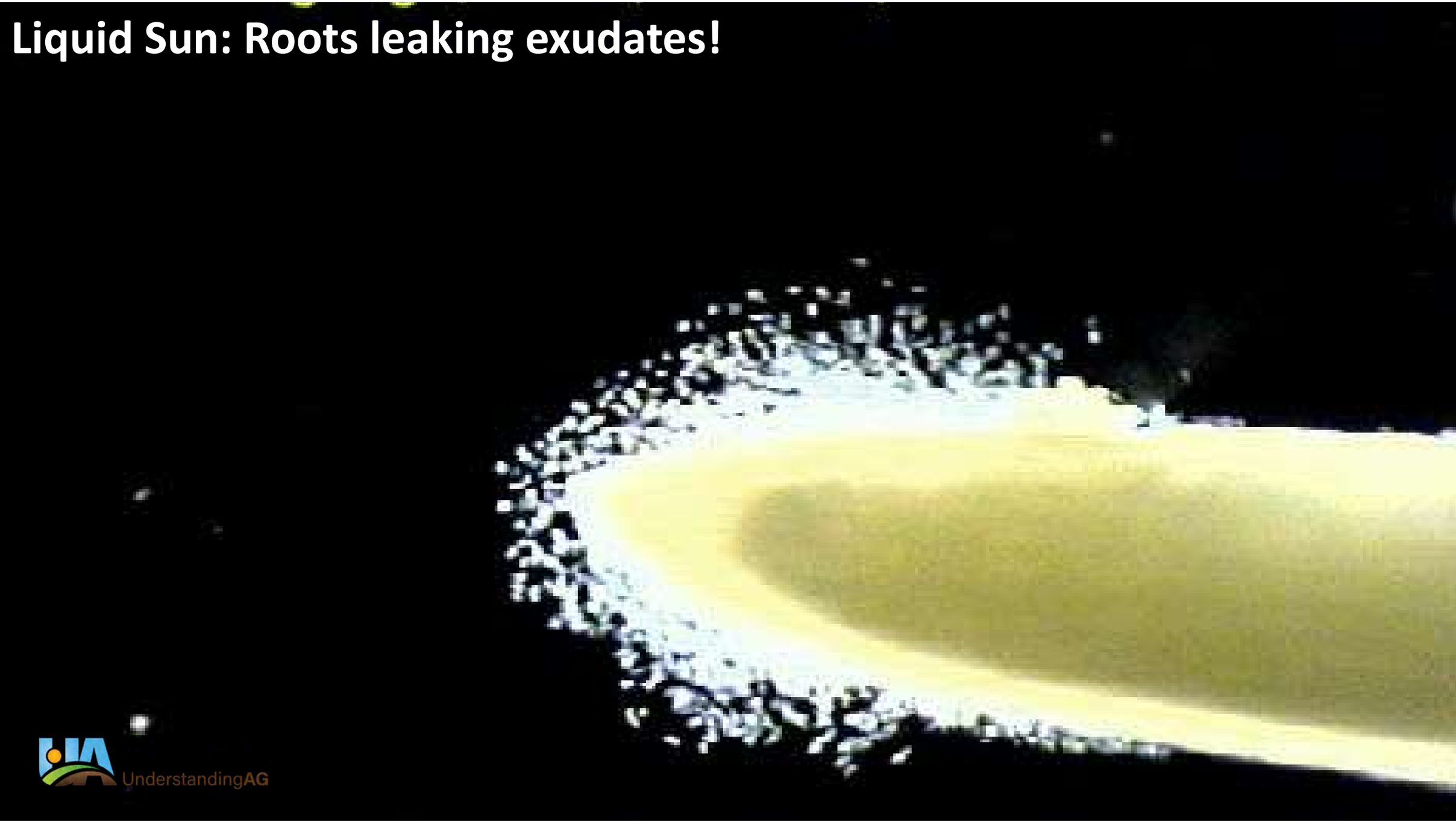
The Rhizosphere





UnderstandingAG

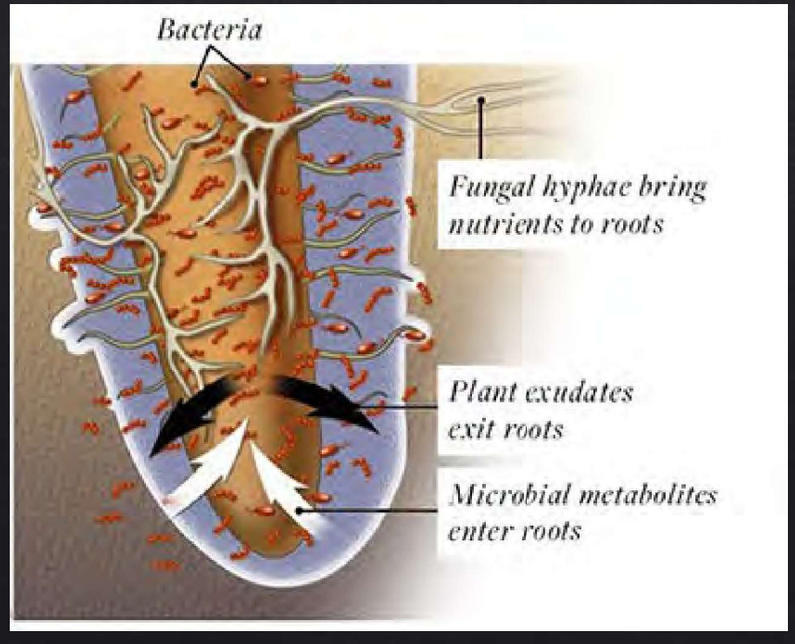
Liquid Sun: Roots leaking exudates!

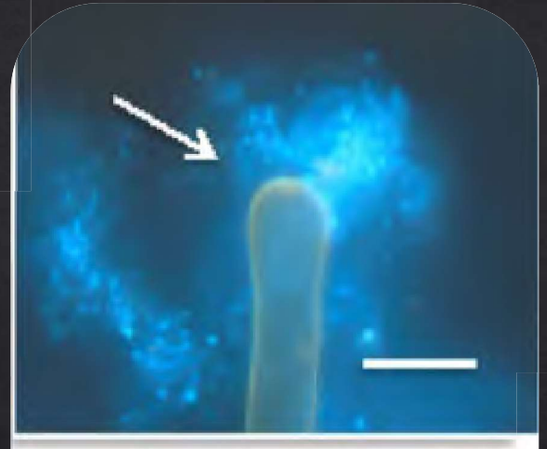


UnderstandingAG

Rhizosphere Biological Hotspot

Rhizosheaths



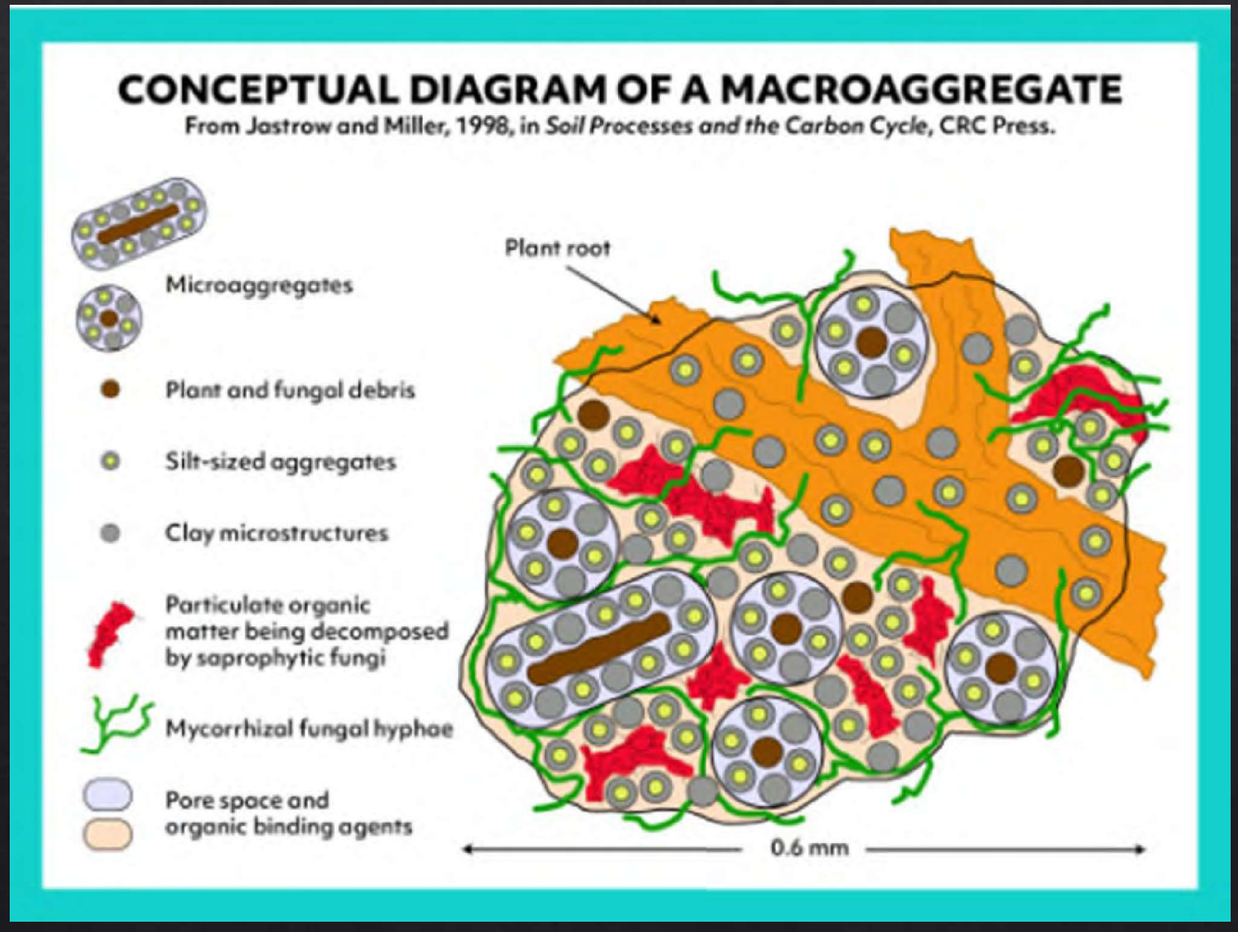


Bacteria (arrow) emerging from root hair tip of millet seedling.

Plant Roots Attract Microbes

UnderstandingAG

The Creation of Soil Aggregates

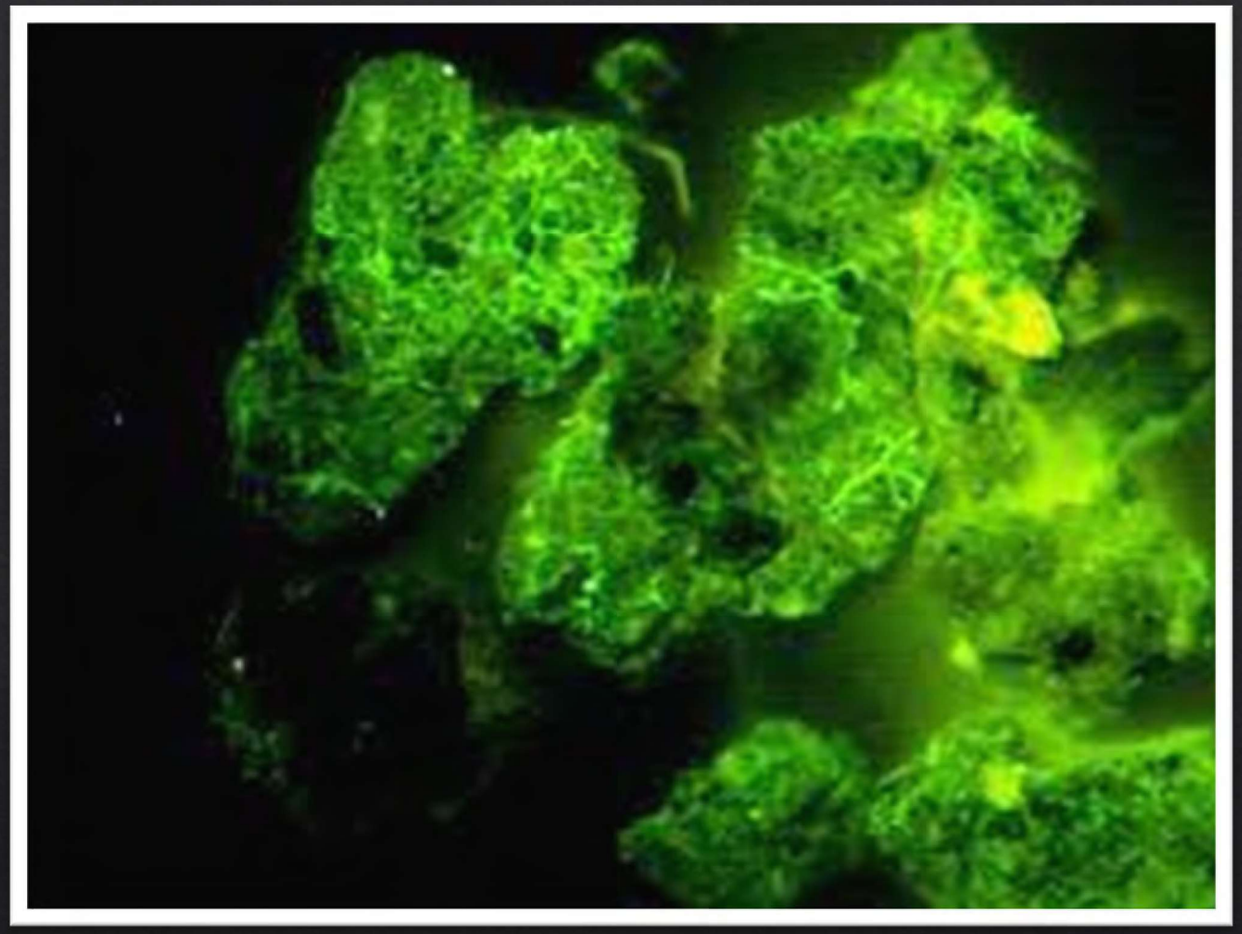


The Creation of Soil Aggregates

Biological Glues

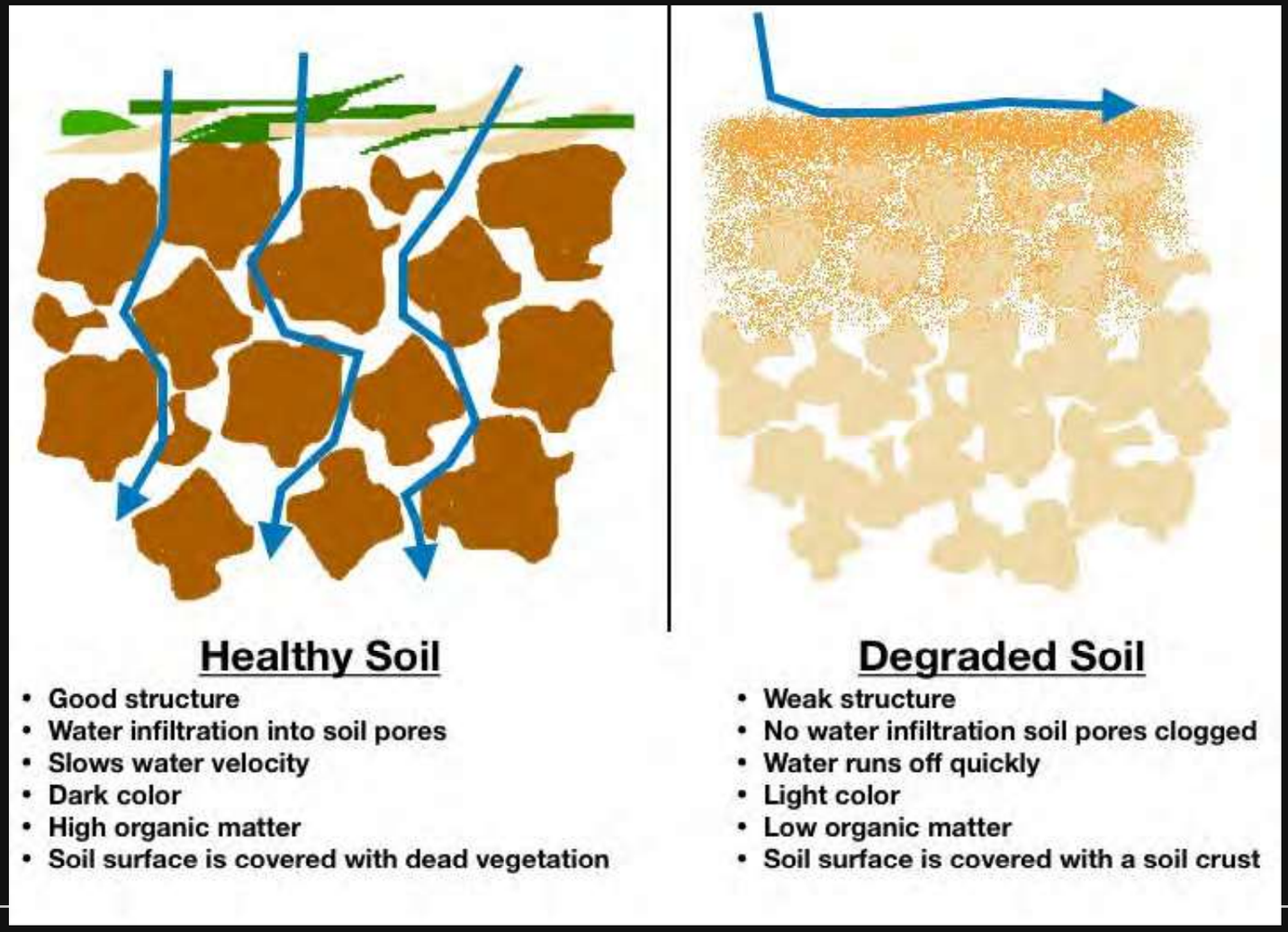
Glomalin

Mycorrhizal Fungi produce Glomalin



UnderstandingAG

Good Aggregation = Good Soil Function



Healthy Soil

- Good structure
- Water infiltration into soil pores
- Slows water velocity
- Dark color
- High organic matter
- Soil surface is covered with dead vegetation

Degraded Soil

- Weak structure
- No water infiltration soil pores clogged
- Water runs off quickly
- Light color
- Low organic matter
- Soil surface is covered with a soil crust

UnderstandingAG

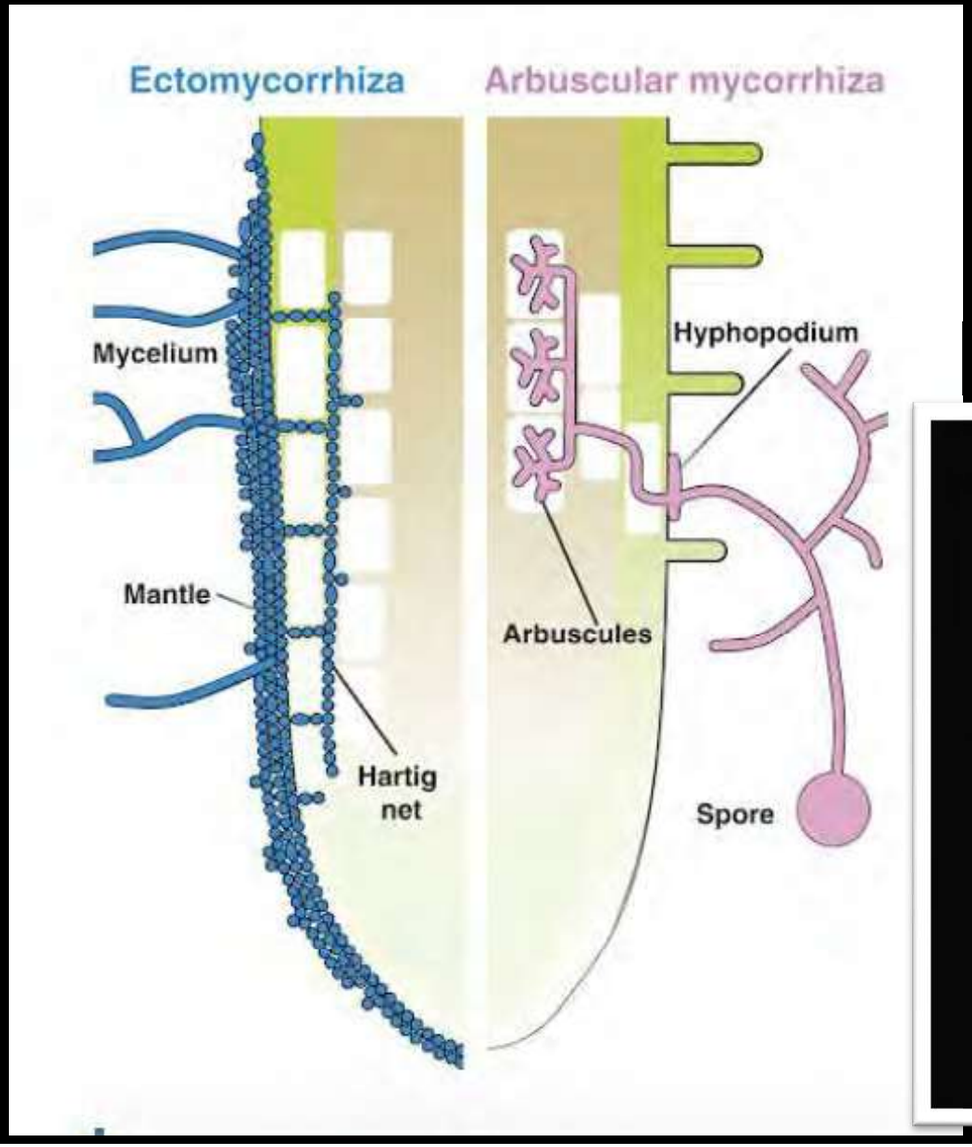
SOIL HEALTH ACADEMY®

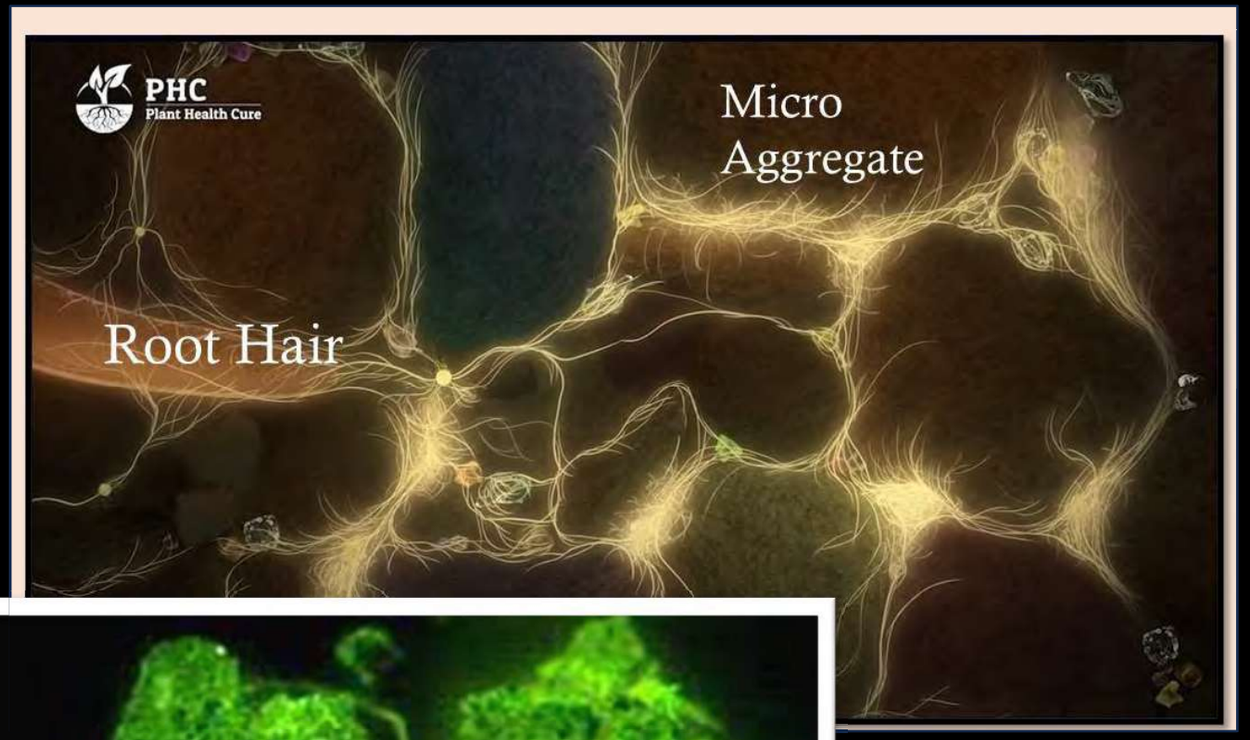
Disease Suppressive Soils

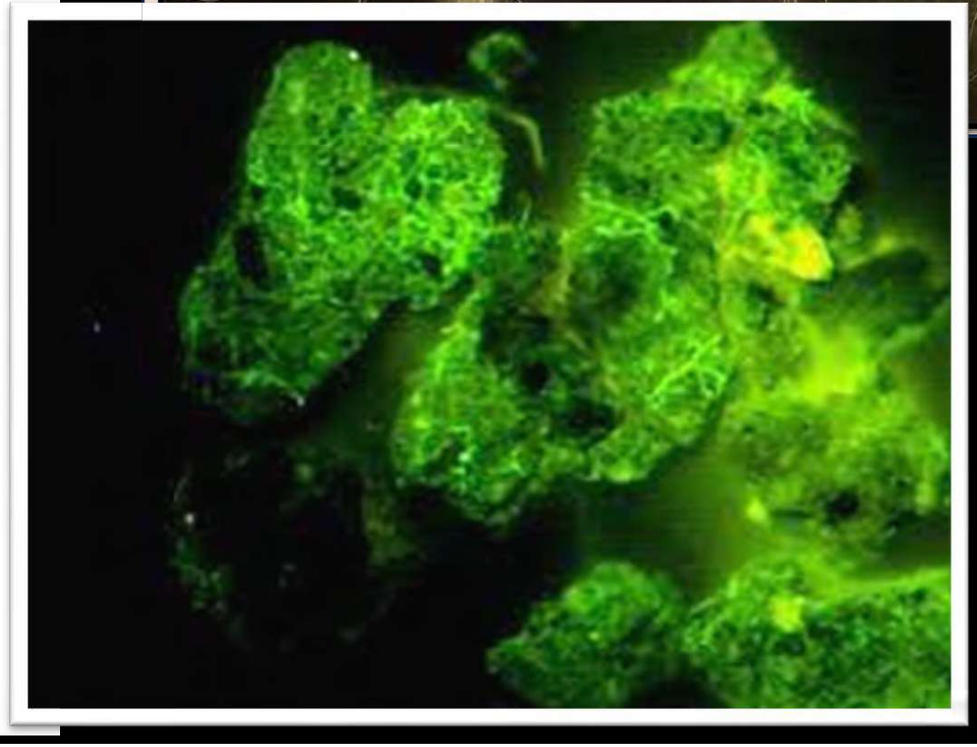
- Must Create Strong Soil Aggregates
- Aerobic Conditions
- Anaerobic Conditions – at the micro aggregate
- Less Oxidation
- More Reduction

SOIL HEALTH ACADEMY®

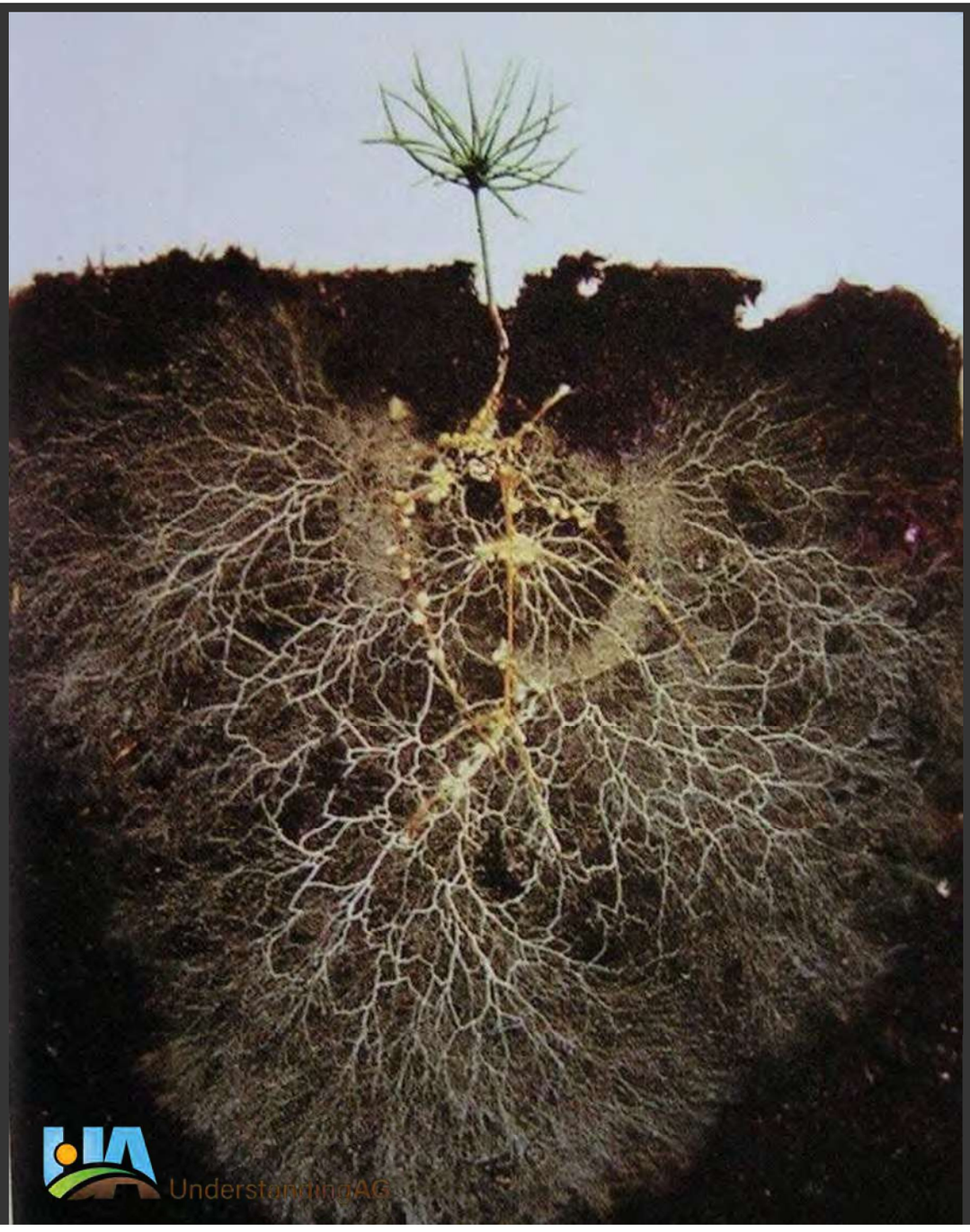
Mycorrhizal Fungi







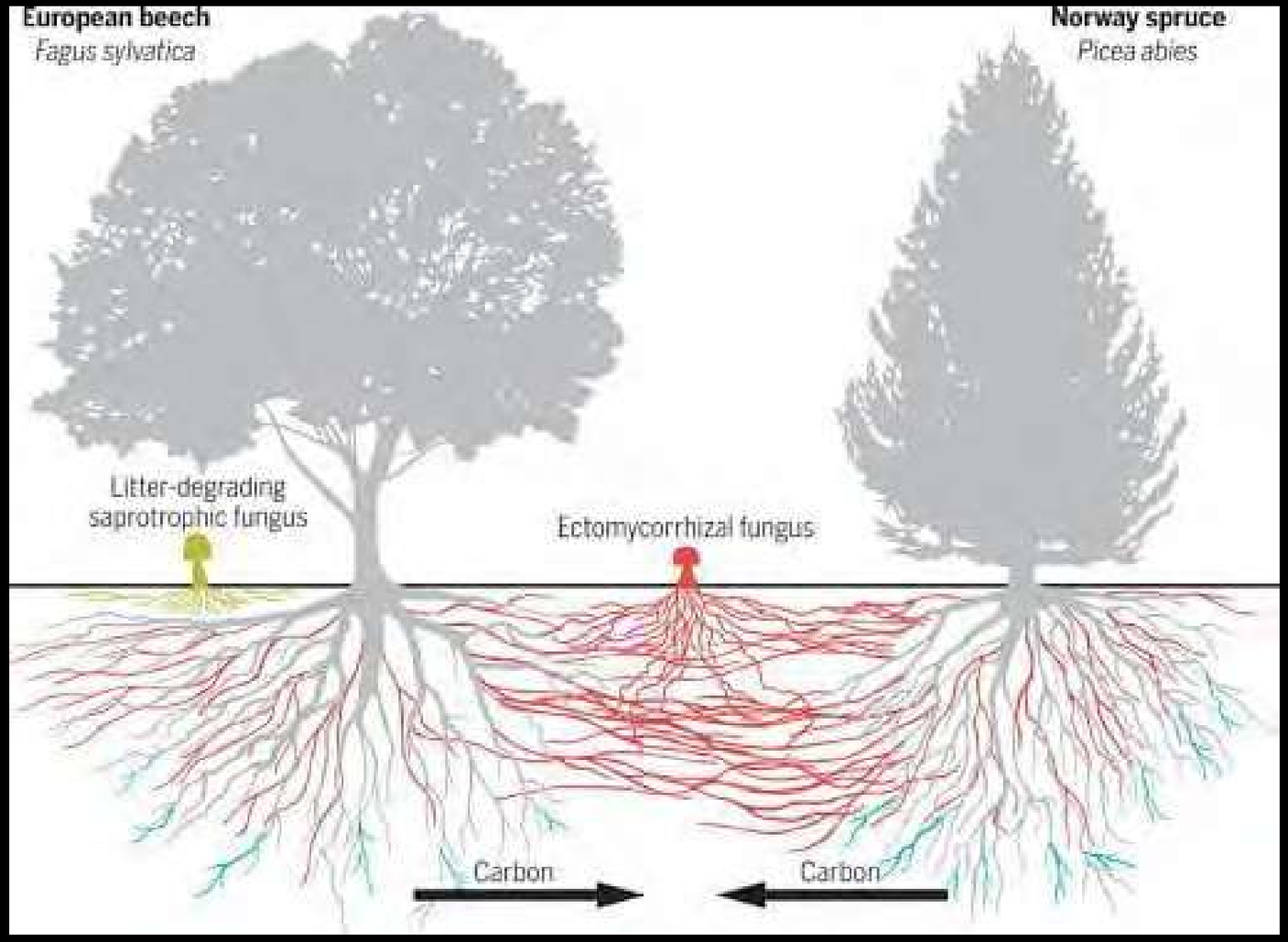
UnderstandingAG



PERENNIAL CROPS ARE HIGHLY DEPENDENT ON MYCORRHIZAL FUNGI

- **Mine nutrients – Trace Elements**
- **Transports Nutrients**
- **Reduce fertilizer requirements**
- **Transports water when soil is nearing critical wilting point**
- **Critical to building soil aggregation**
- **Soil Carbon Cyclers**

Fungal Network Connections

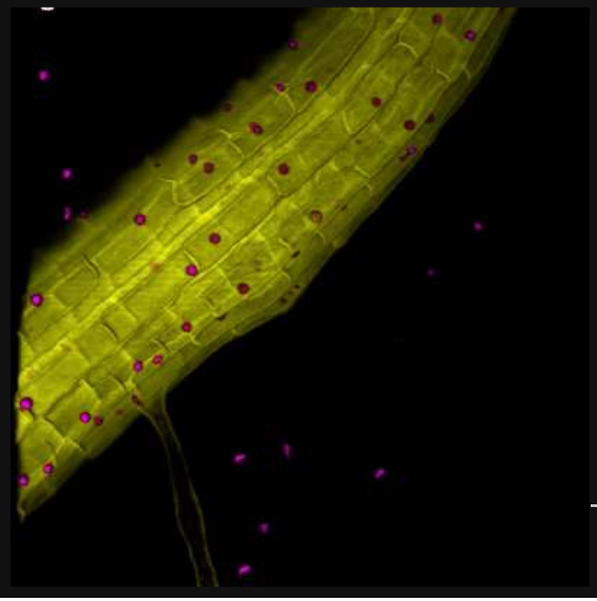


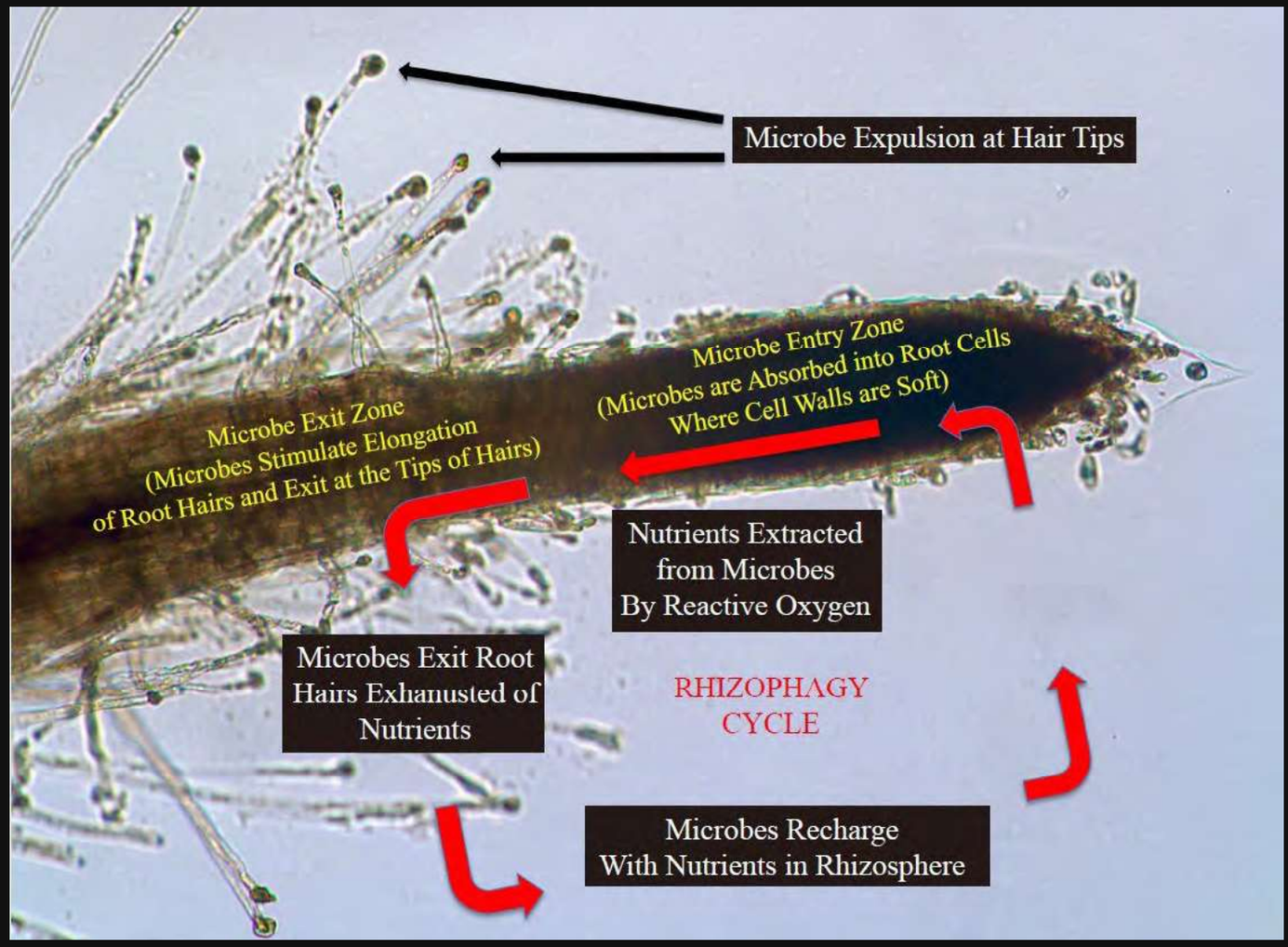
UnderstandingAG

Rhizophagy Cycle

Dr. James White

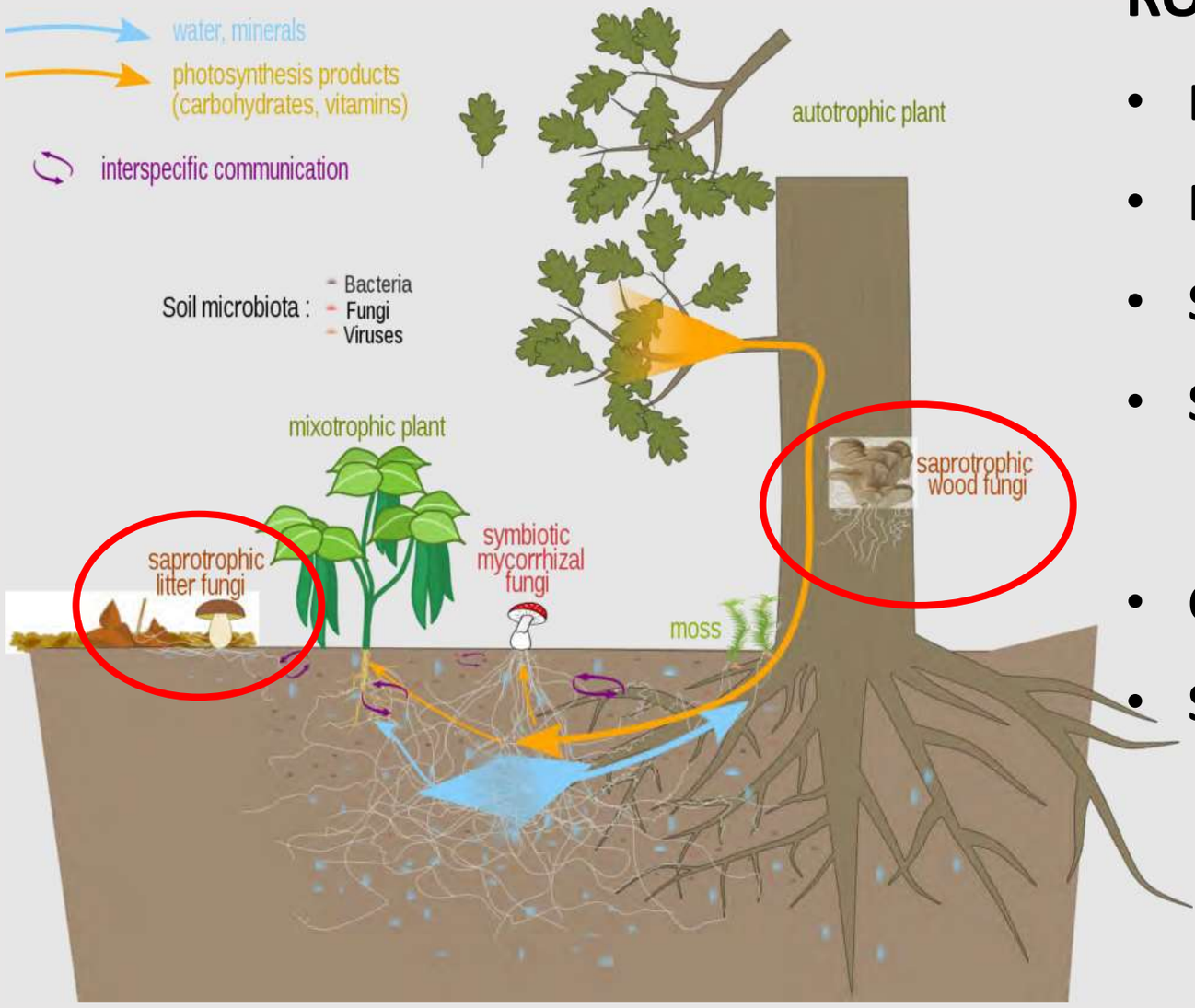
How Beneficial Microbes Feed Plants





Chang et. al. (2023) Endophyte Symbiosis: Evolutionary Development, and Impacts of Plant Agriculture. *Grass Research* 2023, 3:18

SOIL HEALTH ACADEMY®

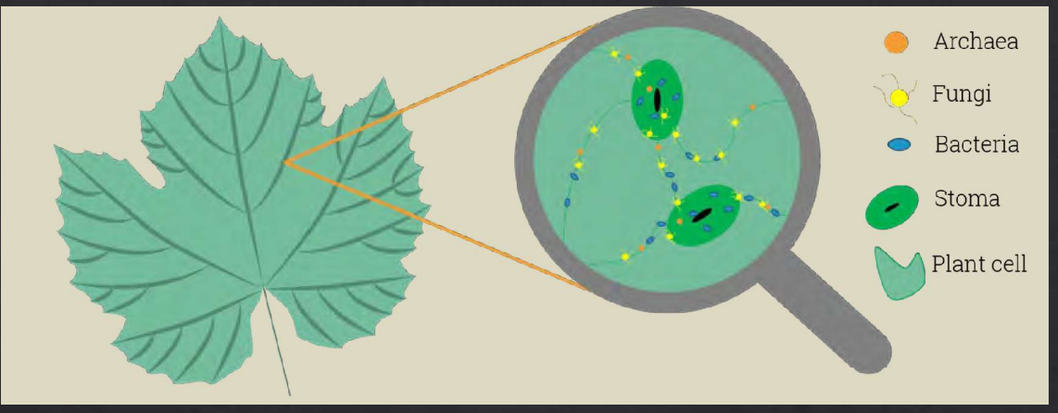


ROLE OF SAPROPHYTIC FUNGI

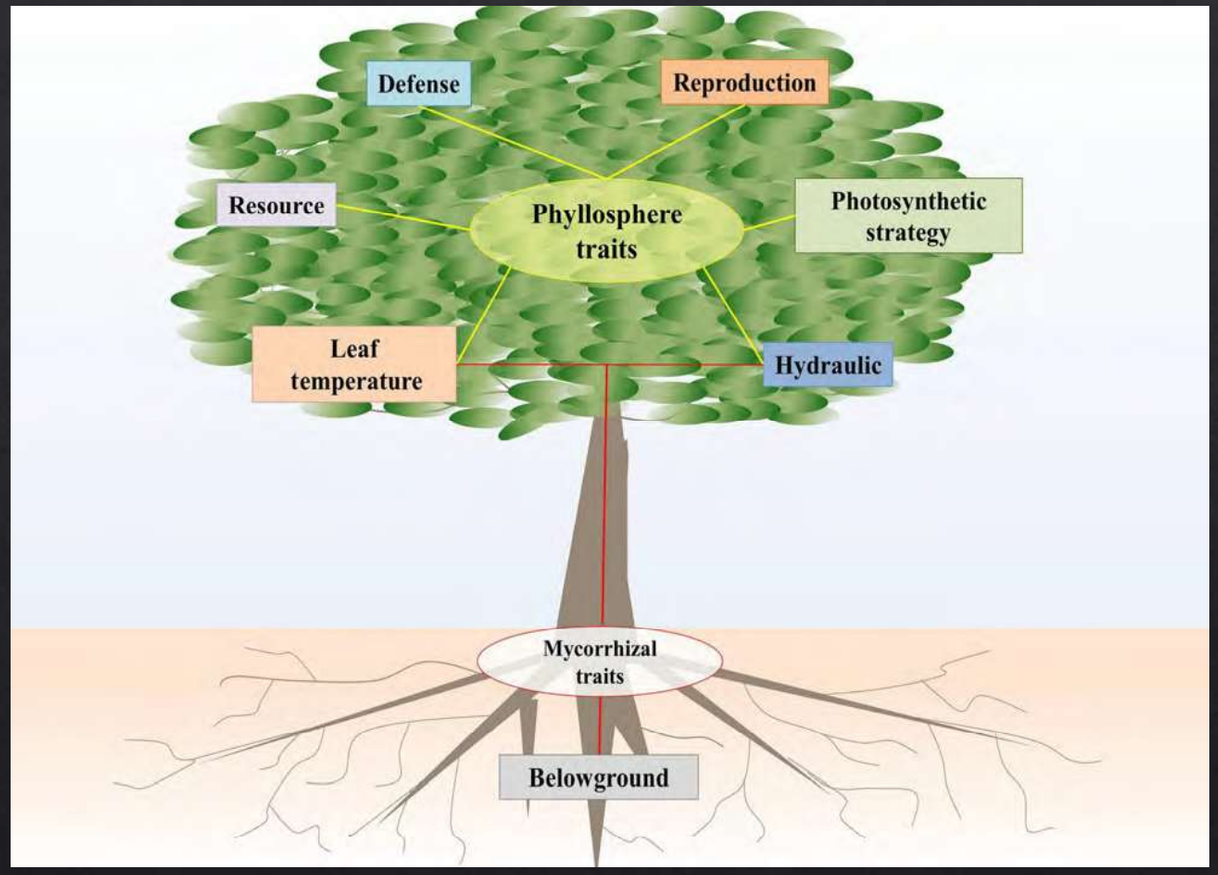
- Decomposers of Dead OM
- Nutrient Cyclers
- Suppress Pathogens
- Saprophytes can become pathogenic

- Cellulose and Lignin Food Source
- Sensitive to most fungicides

Phyllosphere Microbiome



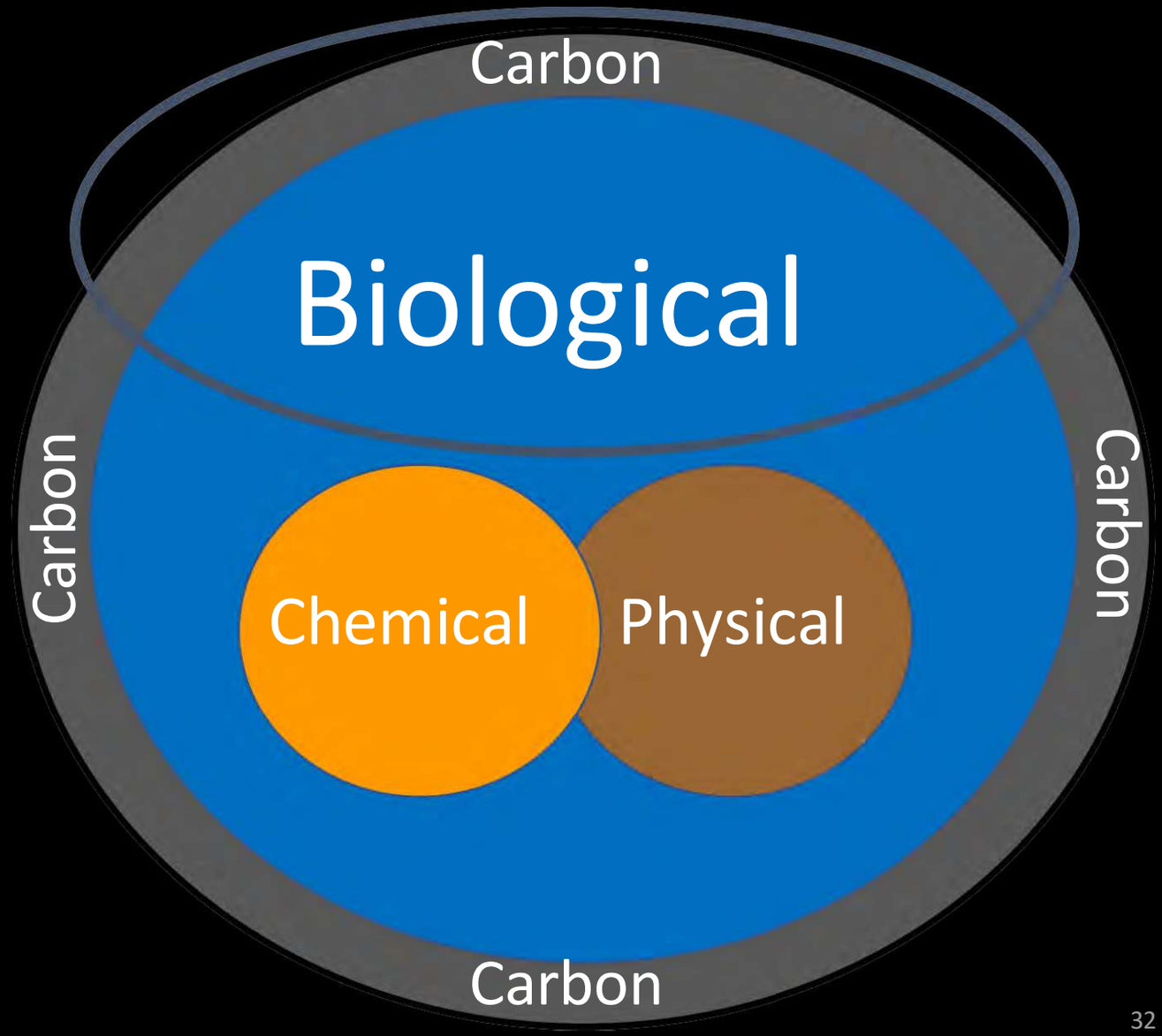
- Biological control – reduce and control pathogenic diseases
- Nutrient Cycling – fixation of N, P, Zn solubilizers
- Soil diversity drives Plant Canopy diversity and function



New Phytologist, The importance of phyllosphere on plant functional ecology: a phyllo trait manifesto, 2018

Regenerative model of soil function

The value is in **carbon** and **biology**

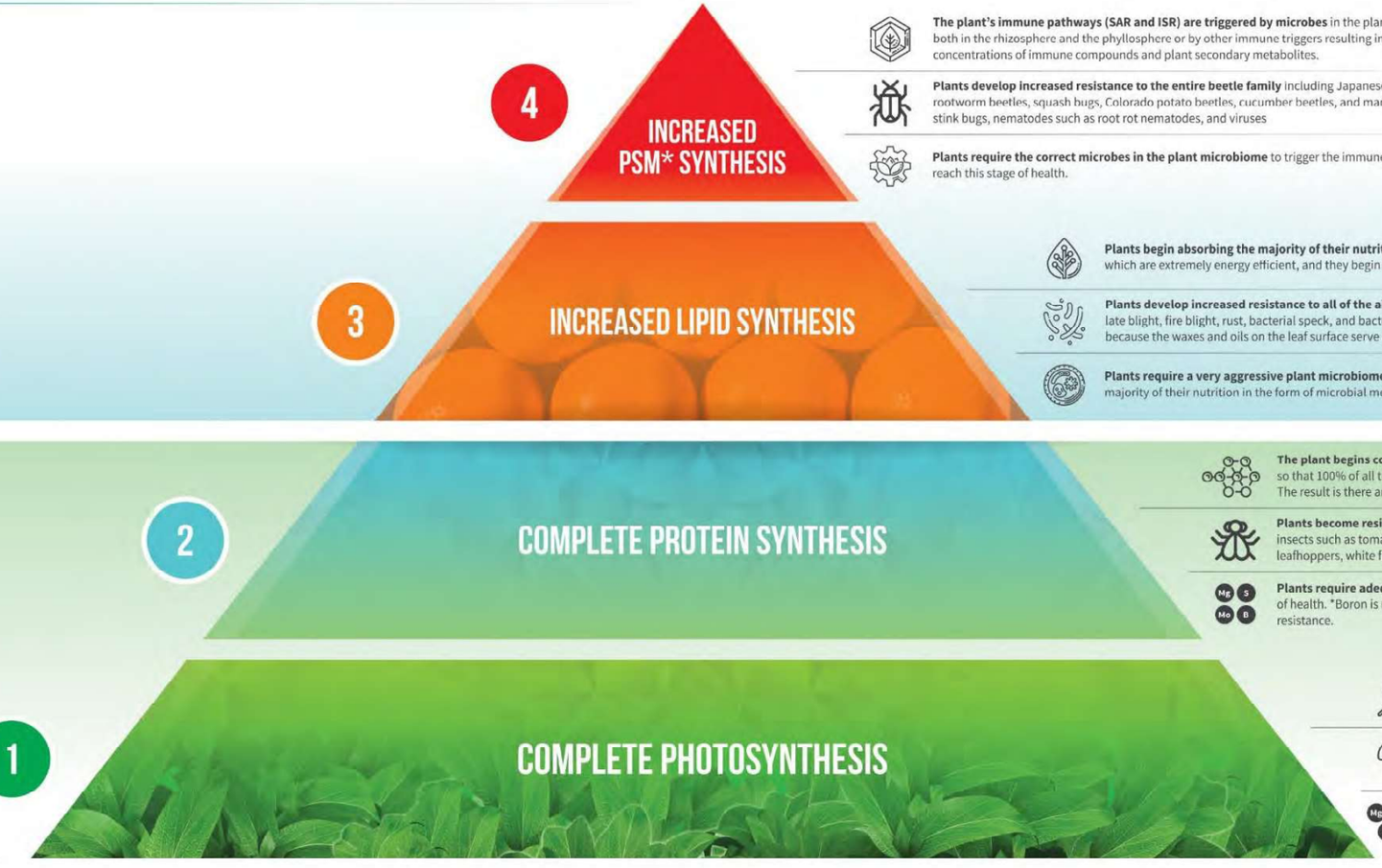



FUNCTIONING
SOIL BIOLOGY
=
FUNCTIONING
SOIL NUTRIENT CYCLING
=
BALANCED PLANT NUTRITION

PLANT HEALTH PYRAMID

er 2 levels are **active immunity**
based on **vigorous biology**.

er 2 levels are **passive immunity**
ased on **balanced chemistry**.



The plant's immune pathways (SAR and ISR) are triggered by microbes in the plant's microbiome, both in the rhizosphere and the phyllosphere or by other immune triggers resulting in increased concentrations of immune compounds and plant secondary metabolites.

Plants develop increased resistance to the entire beetle family including Japanese beetles, corn rootworm beetles, squash bugs, Colorado potato beetles, cucumber beetles, and marmorated stink bugs, nematodes such as root rot nematodes, and viruses

Plants require the correct microbes in the plant microbiome to trigger the immune response to reach this stage of health.

Plants begin absorbing the majority of their nutrition in the form of microbial metabolites which are extremely energy efficient, and they begin storing surplus energy in the form of lipids.

Plants develop increased resistance to all of the airborne fungal and bacterial pathogens such as downy mildew, powdery mildew, late blight, fire blight, rust, bacterial speck, and bacterial spot which land on the leaf surface and release peptolytic enzymes, because the waxes and oils on the leaf surface serve as a shield to prevent the enzymes from working.

Plants require a very aggressive plant microbiome in the rhizosphere to begin absorbing the majority of their nutrition in the form of microbial metabolites to reach this stage of health.

The plant begins converting all of the soluble nitrogen compounds to amino acids and complete proteins so that 100% of all the nitrogen in the plant is converted to a complete protein in every 24-hour photo cycle. The result is there are no nitrates and no ammonium remaining in plant sap in every 24 hour photo period.

Plants become resistant to insects with simple digestive systems, especially larval and sucking insects such as tomato horn worms, cabbage loopers, corn borers, corn ear-worms, aphids, leafhoppers, white flies, and thrips.

Plants require adequate levels of magnesium, sulfur, molybdenum, and boron* to reach this stage of health. *Boron is not directly involved in protein synthesis but contributes additional pest resistance.

The **volume of photosynthesis increases anywhere from 150-600%** and the carbohydrate profile changes to be composed of a high proportion of complex carbohydrates with low levels of nonreducing sugars in the plant sap.

Plants develop resistance to soil-borne fungal pathogens such as verticillium, fusarium, rhizoctonia, pythium, phytophthora, and others.

Plants require adequate levels of magnesium, iron, manganese, nitrogen, and phosphorus* to reach this stage of health. *Phosphorus is not directly involved in photosynthesis but is needed for photosynthate metabolism with the increased sugar production.

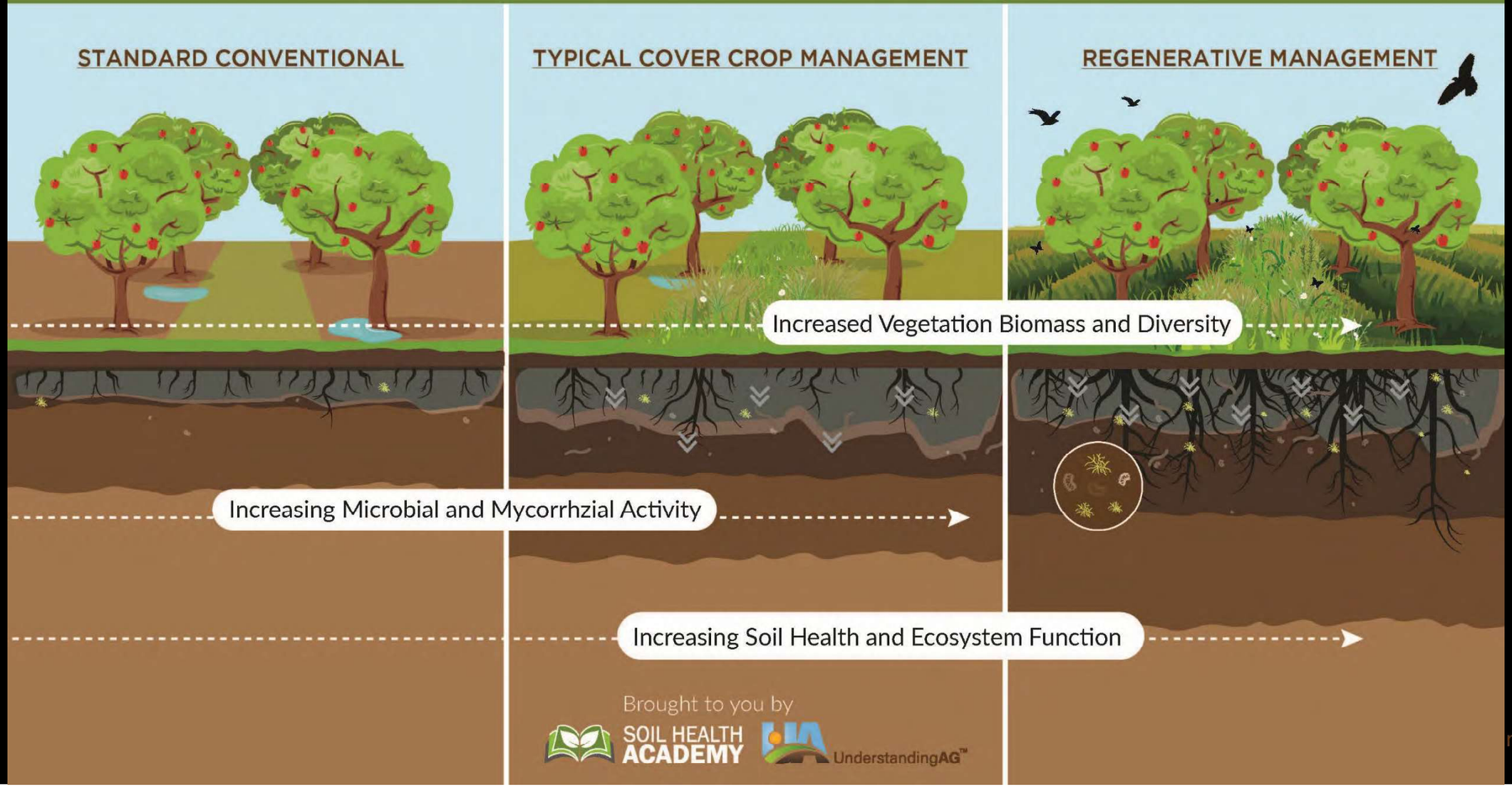
"Healthy plants can become completely resistant to diseases and insects."

- John Kempf -

AdvancingEcoAg.com

Carbohydrate Storage
Winter Survival
Bud Break and Pollination
Disease Resistance

REGENERATIVE ORCHARD MANAGEMENT



Build Soil Aggregation

Vine Row

Middles

UnderstandingAG

Low Mowing – Cascading Negative Effects

SOLAR ENERGY CAPTURE

Cascading Negative Effects

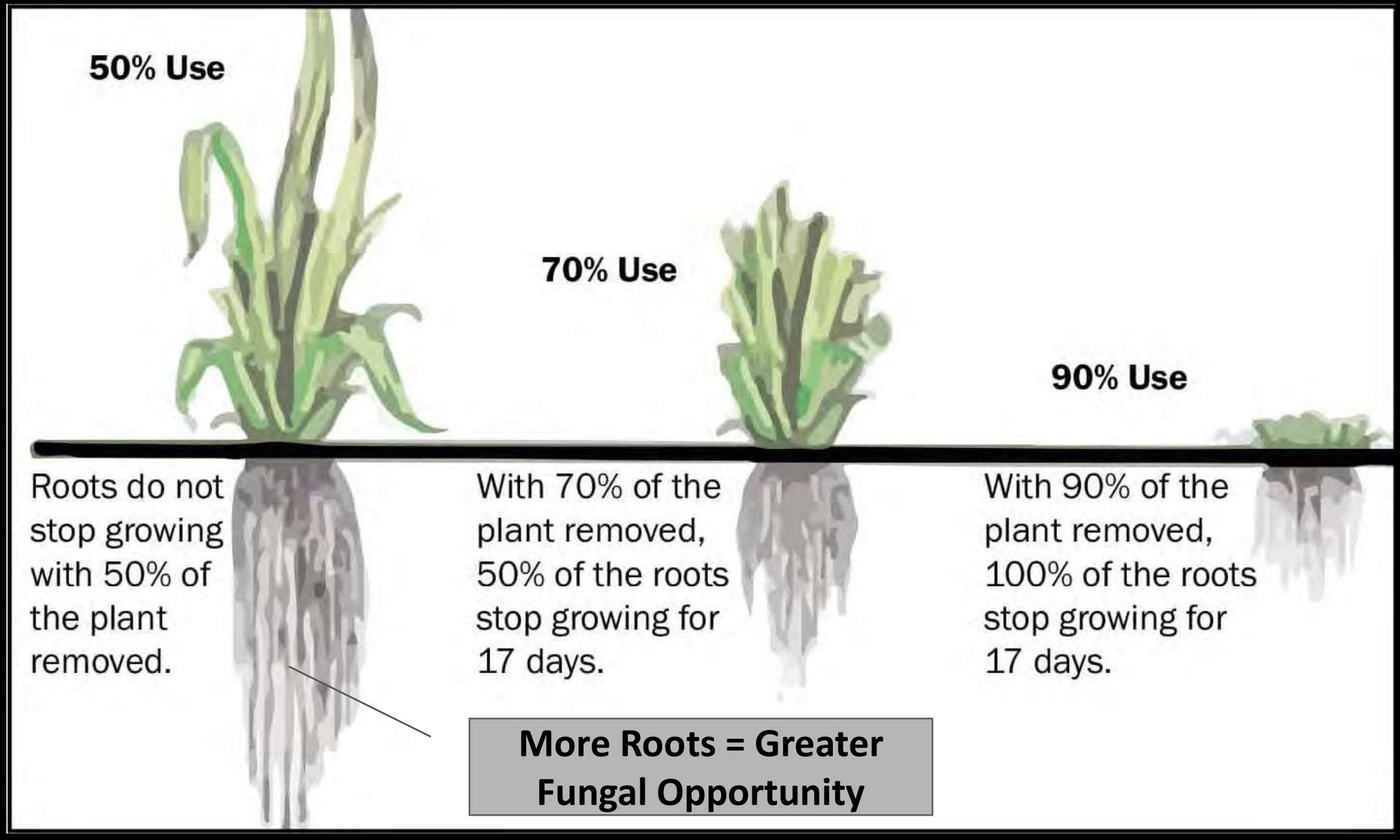
CONTINUOUS LOW MOWING

CASCADING NEGATIVE EFFECTS

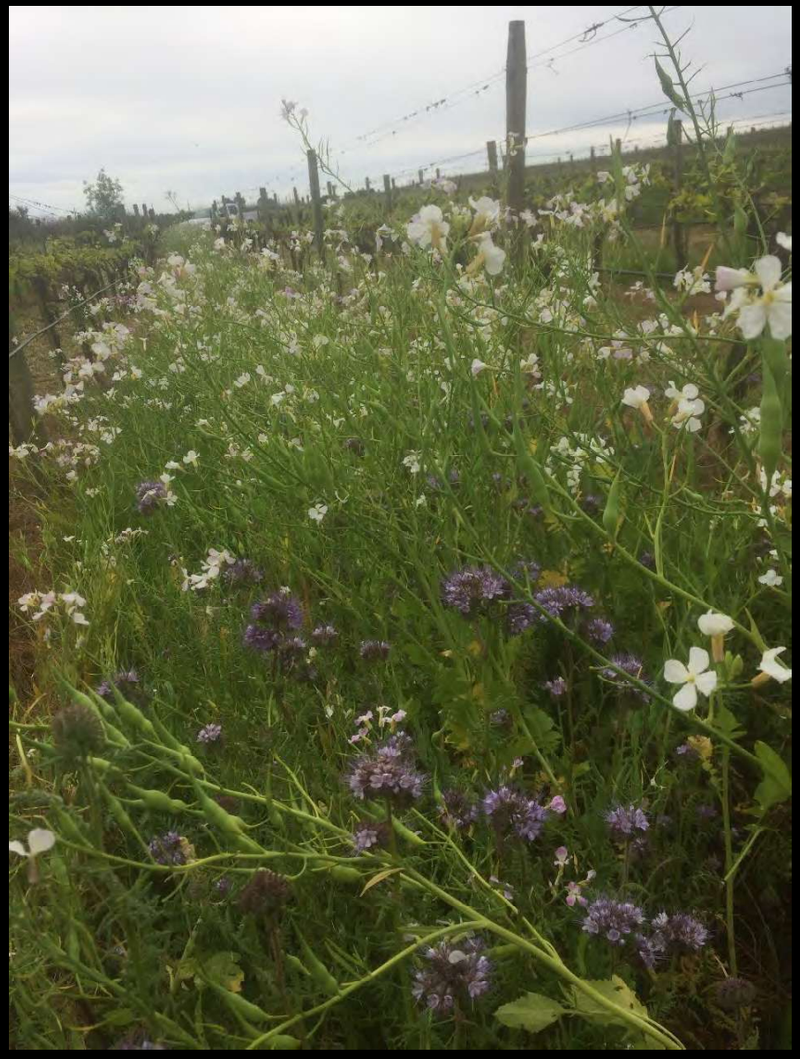
SOLAR ENERGY CAPTURE REDUCED

SHALLOW ROOT SYSTEM

Reduced Nutrient Cycle


50% Use
70% Use
90% Use
Roots do not stop growing with 50% of the plant removed.
With 70% of the plant removed, 50% of the roots stop growing for 17 days.
With 90% of the plant removed, 100% of the roots stop growing for 17 days.
More Roots = Greater Fungal Opportunity

Capture More Sunlight as Many Days as Possible



SOLAR ENERGY CAPTURE

Cascading Positive Effects

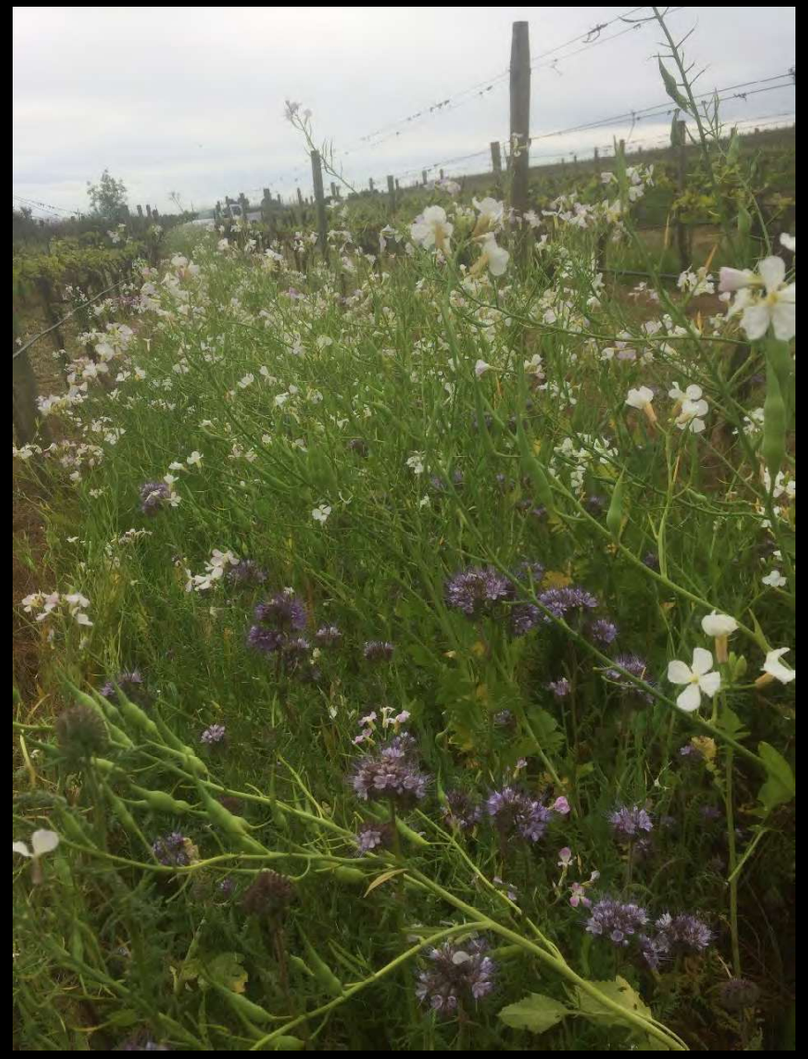
Capture More Sunlight as Many Days as Possible

SOLAR ENERGY CAPTURE

Cascading Positive Effects

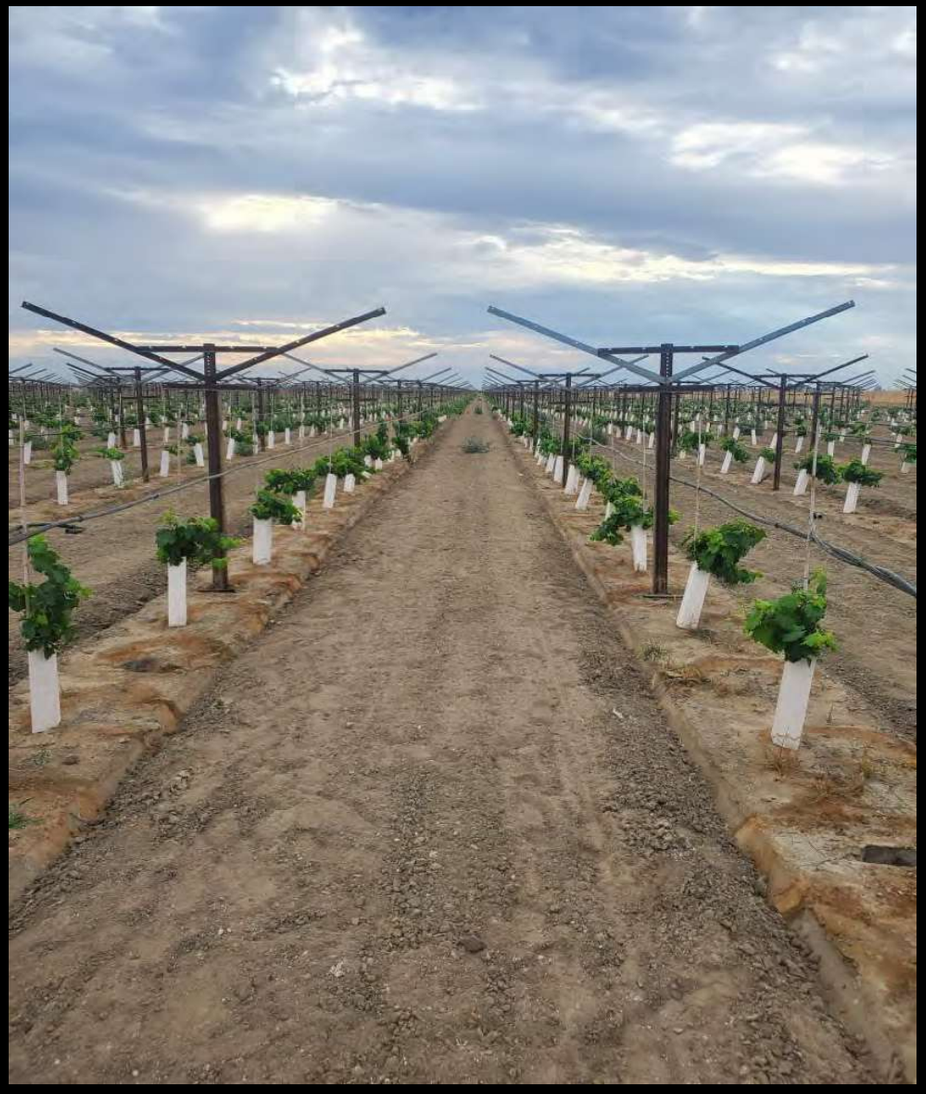
Build Vineyard Floor Diversity

Annual and Perennial flower strips in fruit orchards, 2018, FiBL



UnderstandingAG

SOLAR LEAKAGE = BROKEN ECOSYSTEM



SOLAR ENERGY CAPTURE

Cascading Negative Effects

SOLAR LEAKAGE = BROKEN ECOSYSTEM

SOLAR ENERGY CAPTURE

↓

Cascading Negative Effects

When soil temp reaches. . .

140°F Soil bacteria die

130°F 100% moisture lost through evaporation & transpiration – Most microbes are Dead

105°F Proteins/enzymes begin to break down

100°F 15% moisture is used for growth , 85% moisture lost through **evaporation & transpiration**

70°F 100% moisture is used for growth

J.J. Mc Entre, USDA SCS, Kerrville, TX, 1956

SOIL HEALTH ACADEMY®

Living Plants = More Soil Armor = Reduce Temperatures in the FIELD

SOLAR ENERGY CAPTURE

Cascading Positive Effects

Ma


ThermoWorks
SCAN
°F
676
862
°C/°F
Mode
Lock


ThermoWorks
SCAN
°F
1170
748
°C/°F
Mode
Lock

REGENERATIVE TRANSITION

PUTTING CONCEPTS INTO PRACTICE

- REMOVE DOGMA
- EMBRACE YOUR CONTEXT
- PIVOT WHEN NEEDED
- FARM WITH INTENTIONALITY
- FOLLOW UP A DISTURBANCE WITH A STRONG POSITIVE
- DO NOT ALLOW TOO MUCH IN ROW VEGETATION COMPETITION – **FOR TOO LONG**
- **GOOD NUTRITION MANAGEMENT IS CRITICAL**
- GET YOUR NUTRITION RIGHT – LBS OF NUTRIENTS DAYS ARE OVER

UnderstandingAG

NO TILL TRANSITION

TRANSITIONING FROM EXCESSIVE TILLAGE TO REDUCED TILLAGE

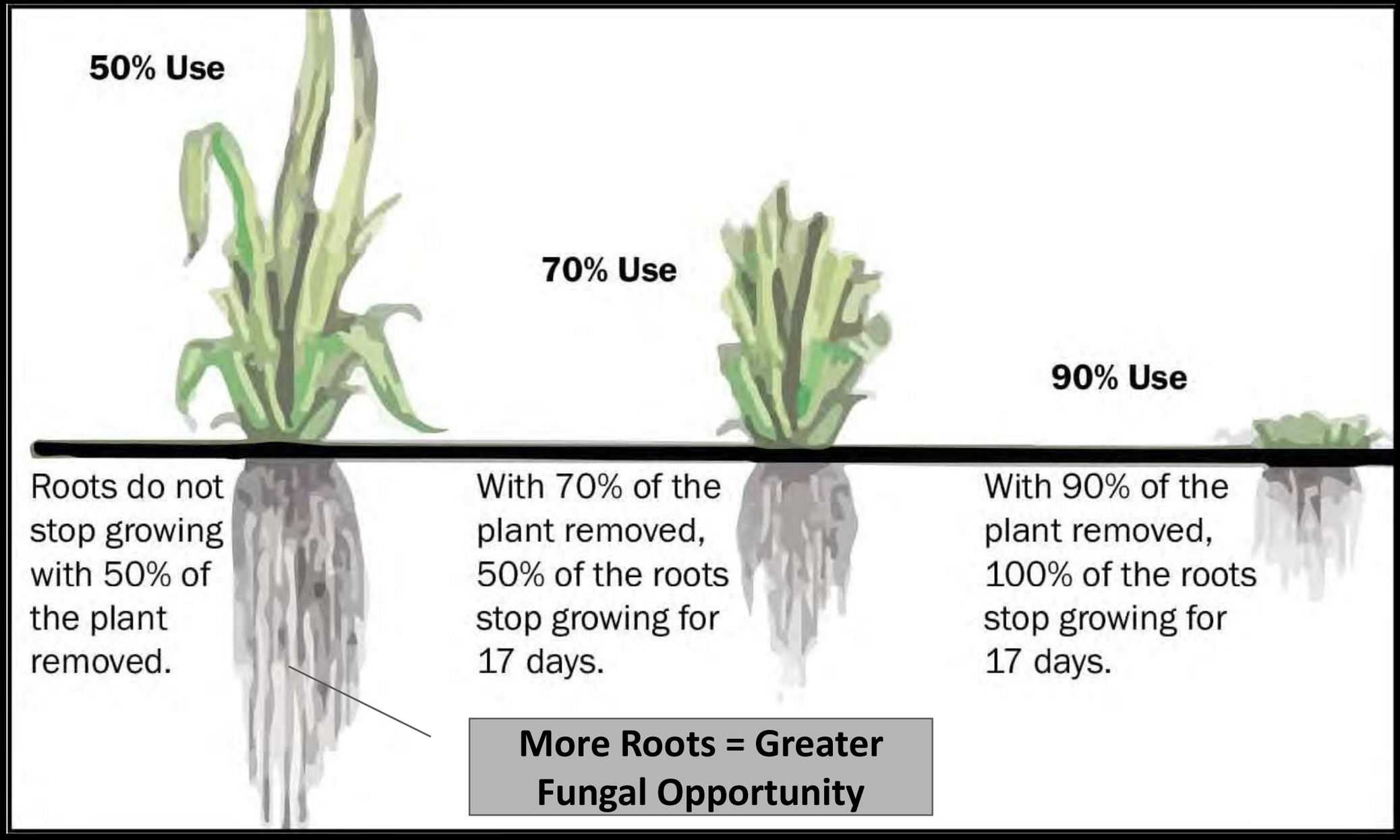
- What is the current state and condition of your soil?
- Compacted?
- What is our main goal when seeding a cover crop?
- You are a cover crop/forage farmer – it needs to grow well in Year 1
- Light tillage in fall to get better seed to soil contact and break up the surface compaction always leads to better cover crop establishment and growth
- Common Issues: NT seeding into highly compacted ground = poor cover NT cover crop establishment

How to establishment and Manage a Productive Successful Cover Crop

Maximize your cover crop benefits for soil health and Ecosystem Function

- Allow cover crop to grow tall – Put on Good Biomass
- Create lots of vegetative biomass in alleyways
- Be sure to manage vine row early and often as needed
- First Mow – DO NOT MOW TOO EARLY!
- Height of cover crop DOES NOT increase frost damage
- Cover Crops moderate SOIL and FIELD temperatures
- Regen field management reduces early onset of bud break

UnderstandingAG


50% Use
70% Use
90% Use
Roots do not stop growing with 50% of the plant removed.
With 70% of the plant removed, 50% of the roots stop growing for 17 days.
With 90% of the plant removed, 100% of the roots stop growing for 17 days.
More Roots = Greater Fungal Opportunity

Cover Crop Termination Discussion

- UNDERSTAND YOUR GOALS
- KEEP THE SOIL ARMORED…LIMIT SOIL EXPOSURE
- MAINTAIN PHOTOSYNTHESIS = CARBON INPUTS
- DO NOT MOW TOO EARLY OR TOO OFTEN
- HIGH MOWING: 6-8 in minimum height
- SPECIES SELECTION – ANNUALS V PERENNIALS

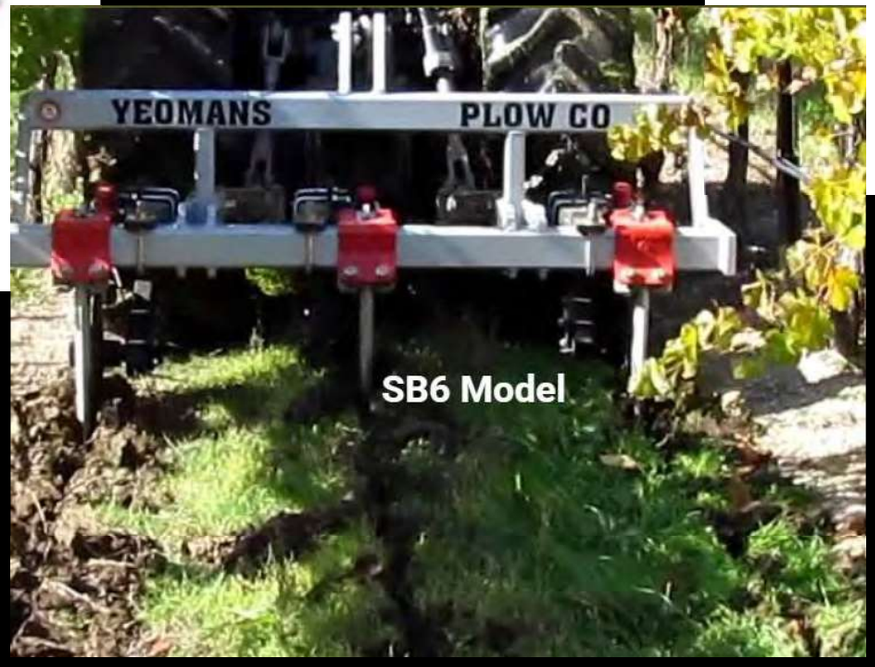
UnderstandingAG

LOW TILLAGE to REDUCE COMPACTION

Understand

LOW TILLAGE to REDUCE COMPACTION

Rinieri Subsoiler

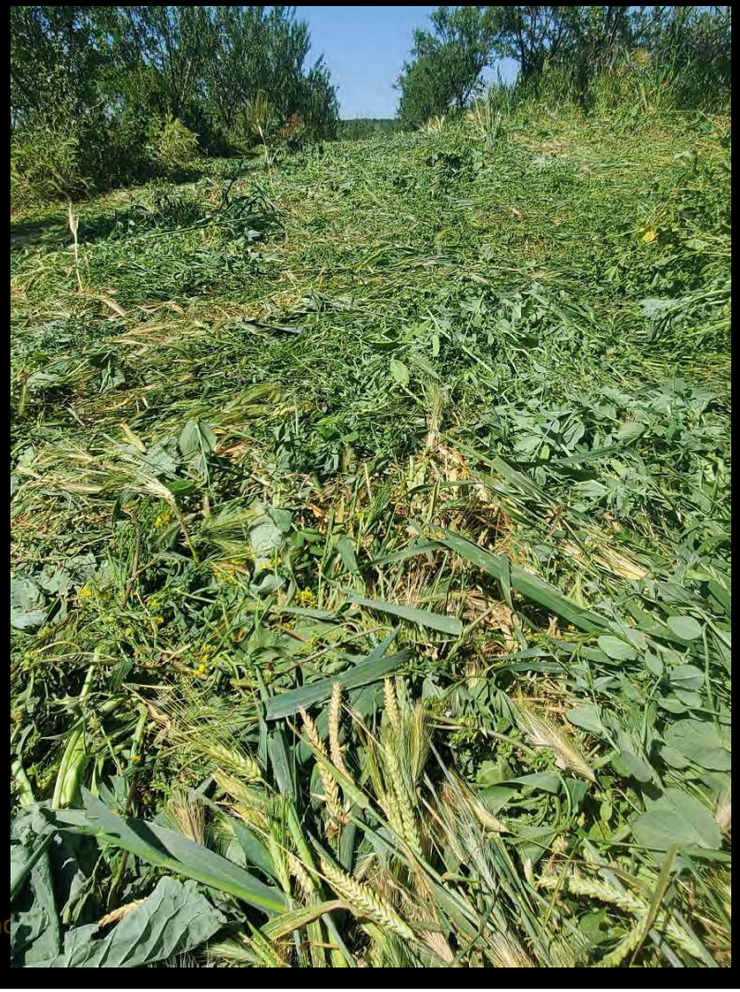


Clemens Bison Subsoiler

UnderstandingAG

NO TILL TECHINQUES

ROLLER CRIMPING DISCUSSION



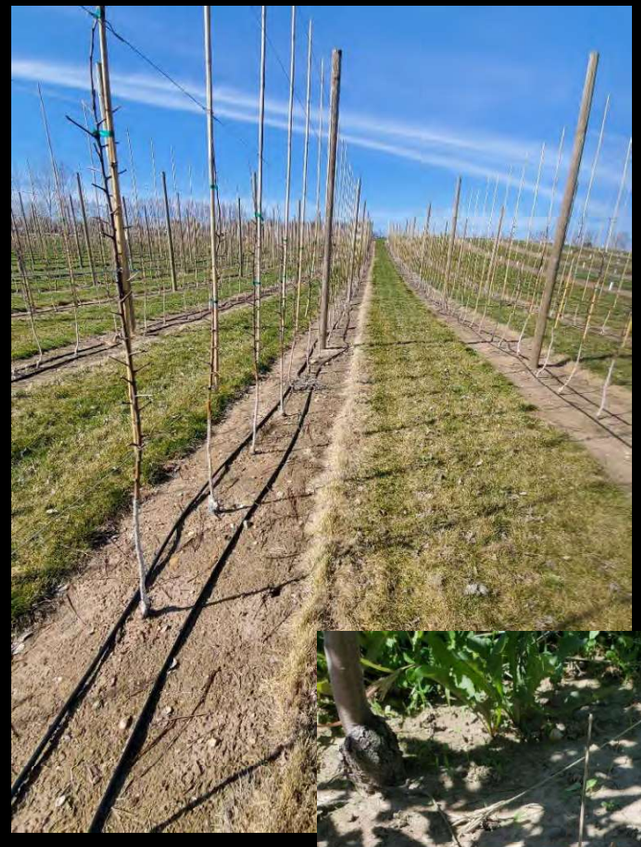
Vine Row Management

Vine Row

Middles

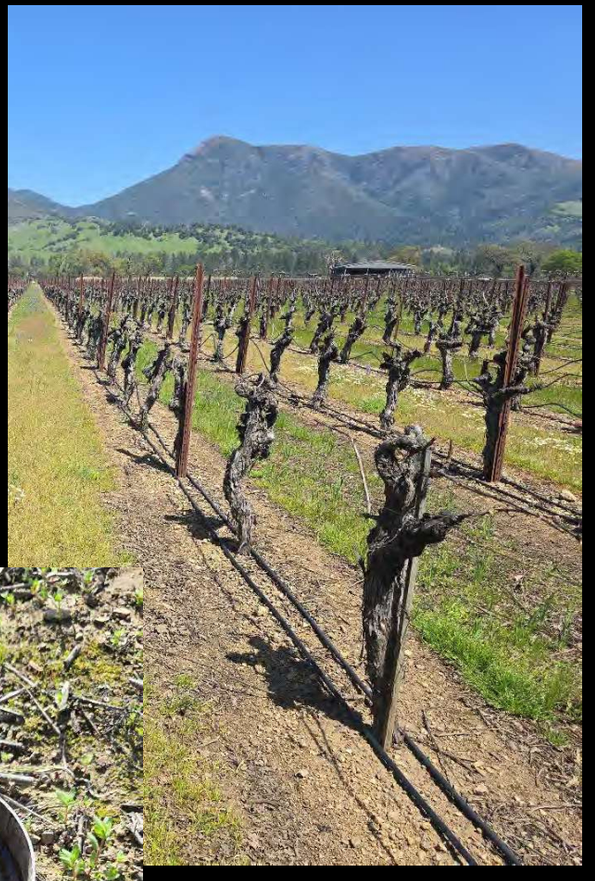
UnderstandingAG

Vine Row Management



The Strip can be a dead zone

When the Vine Row Berm turns into concrete



After 20 minutes the Water still did not Infiltrated

PLFA BIOLOGICAL METRICS	CC	TR	Target Range
Total Living Microbial Biomass, PLFA ng/g	1509.22	757.71	5000+
Functional Group Diversity Index	1.397	1.433	1.5+
Total Bacteria, PLFA ng/g	599.7	324.04	
Total Bacteria, % of Tot. Biomass	39.74	42.77	
Gram Pos Others, PLFA ng/g	255.16	132.88	
Gram Pos Others, % of Tot. Biomass	16.91	17.54	
Actinomycetes, PLFA ng/g	91.32	62.46	400+
Actinomycetes, % of Tot. Biomass	6.05	8.24	
Gram Neg Others, PLFA ng/g	253.22	128.7	
Gram Neg Others, % of Tot. Biomass	16.78	16.99	
Total Fungi, PLFA ng/g	116.54	71.29	800+
Total Fungi, % of Tot. Biomass	7.72	9.41	
Arbuscular Mycorrhizal Fungi, PLFA ng/g	39.24	17.53	400+
Arbuscular Mycorrhizal Fungi, % of Tot. Biomass	2.6	2.31	
Saprophytic Fungi, PLFA ng/g	77.29	53.76	400+
Saprophytic Fungi, % of Tot. Biomass	5.12	7.1	
Protozoa, PLFA ng/g	0	0	0.50+
Protozoa, % of Tot. Biomass	0	0	
Undifferentiated, PLFA ng/g	792.98	362.38	
Undifferentiated, % of Tot. Biomass	52.54	47.83	<40.0
Fungi:Bacteria	0.1943	0.22	0.3
Protozoa:Bacteria	All Bact	All Bact	

Vineyard with Tillage and lots of Chemicals

Sample ID	Tree Row	Cover Crop	Target Range
Total Living Microbial Biomass, PLFA ng/g	3560.15	9276.27	5000+
Functional Group Diversity Index	1.378	1.568	1.5+
Total Bacteria, PLFA ng/g	2119.6	4101.8	
Total Bacteria, % of Tot. Biomass	59.54	44.22	
Gram Pos Others, PLFA ng/g	964.56	1656.49	
Gram Pos Others, % of Tot. Biomass	27.09	17.86	
Actinomycetes, PLFA ng/g	434.63	838.27	400+
Actinomycetes, % of Tot. Biomass	12.21	9.04	
Gram Neg Others, PLFA ng/g	720.41	1607.04	
Gram Neg Others, % of Tot. Biomass	20.24	17.32	
Total Fungi, PLFA ng/g	297.11	1403.37	800+
Total Fungi, % of Tot. Biomass	8.35	15.13	
Arbuscular Mycorrhizal Fungi, PLFA ng/g	135.23	696.86	400+
Arbuscular Mycorrhizal Fungi, % of Tot. Biomass	3.8	7.51	
Saprophytic Fungi, PLFA ng/g	161.88	706.51	400+
Saprophytic Fungi, % of Tot. Biomass	4.55	7.62	
Protozoa, PLFA ng/g	0	46.19	0.50+
Protozoa, % of Tot. Biomass	0	0.5	
Undifferentiated, PLFA ng/g	1143.44	3724.92	
Undifferentiated, % of Tot. Biomass	32.12	40.16	<40.0
Fungi:Bacteria	0.1402	0.3421	0.3
Protozoa:Bacteria	All Bact	0.0113	

Orchard with No Tillage and lots of Chemicals in Tree Row

Vine Row Management

Chemical Reduction

THE STRIP CAN BE A DEAD ZONE

- Complete Reduction in chemicals
- Eliminate Glyphosate – chelates and locks up nutrients (i.e., Ca, micros)
- Eliminate Pre Emergent – Soil Sterilization
- Use Contacts – Use with Precise Timing and Coverage
- Fertilizer Disturbance – high salt nutrient concentrations
- Irrigation Water Quality

Restoring Soil Function in Vine Row
The ART OF TRANSITION

UnderstandingAG

Regenerative Vine Row Management

- Reduce fear of competition
- Allow vegetation to grow through winter into Spring
- Begin Termination before shoot growth becomes vigorous
- Symbiosis of living roots – Biology, Nutrients, Porosity
- Narrow Chemical Strip – Reduce Chemicals

Adaptive approach within Context

Long Term Mindset

Non-Chemical Weed Management

ID David Weeder, Vine Tech Equipment

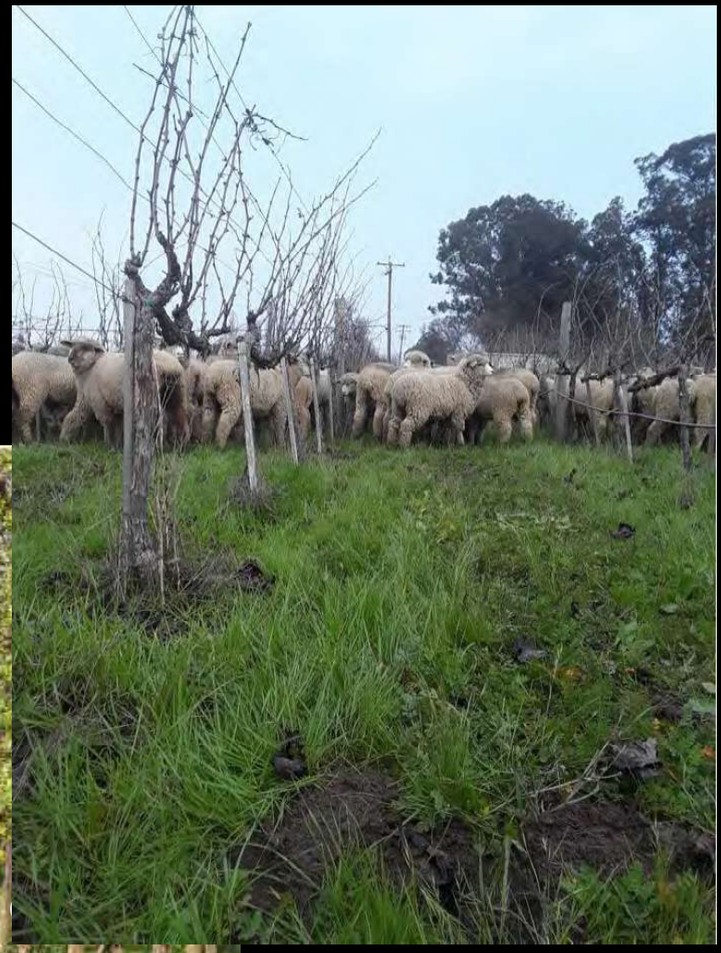
In Row Cultivation – Pros & Cons

UnderstandingAG

Non-Chemical Vegetation Management

Nobili SDS 210 Flail Mower – Mow and Blow

Aedes Side Mower, FiBL Swiitzerland



Napa RCD, Huichica Creek Vineyard

UnderstandingAG

REDUCING CHEMICAL DISTRUBANCES

Perfect Mower FV2 series

Fischer GL4K

UnderstandingAG

REDUCING CHEMICAL DISTRUBANCES

Multi-Prong Approach

UnderstandingAG

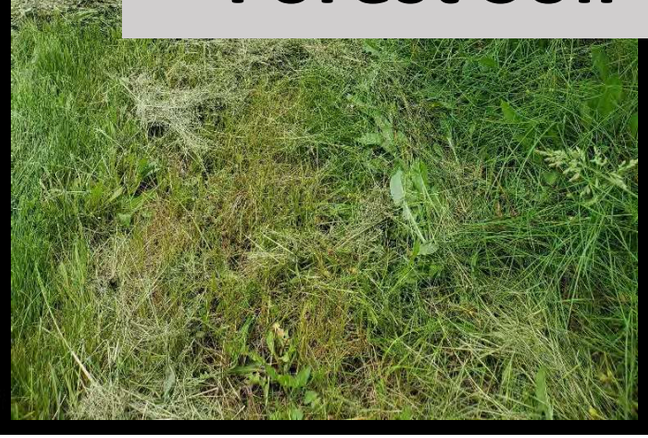
Building Soil Fungal Life

UnderstandingAG

COMPARING TWO TREE ROWS ON THE SAME FARM

MULCH V NO MULCH

Mimicking a Forest Soil

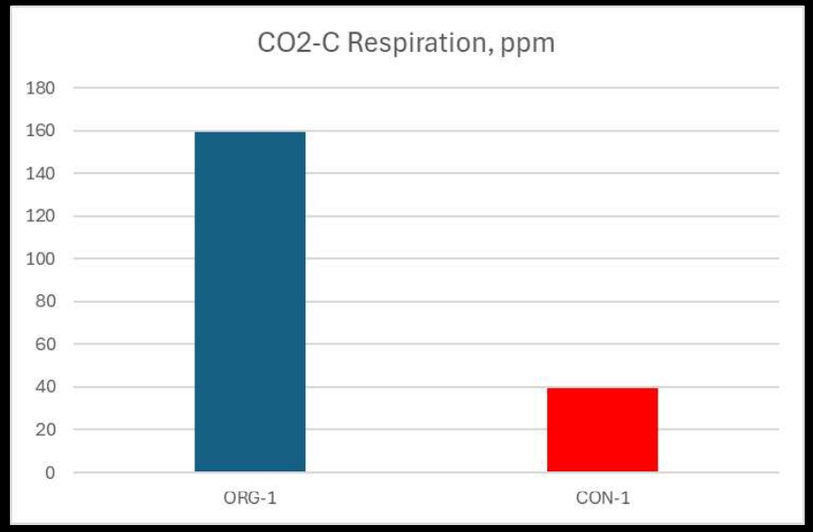


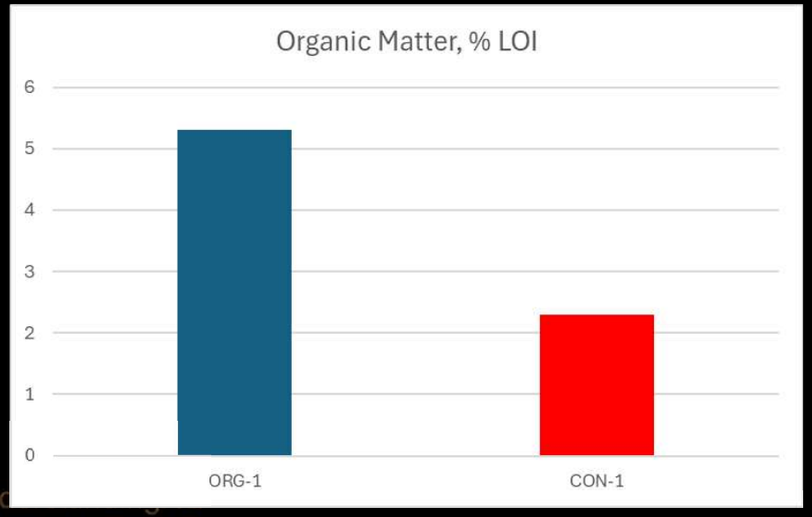
UnderstandingAG

COMPARING TWO TREE ROWS ON THE SAME FARM

MULCH V NO MULCH

ORGANIC VS CON. TRANSITION



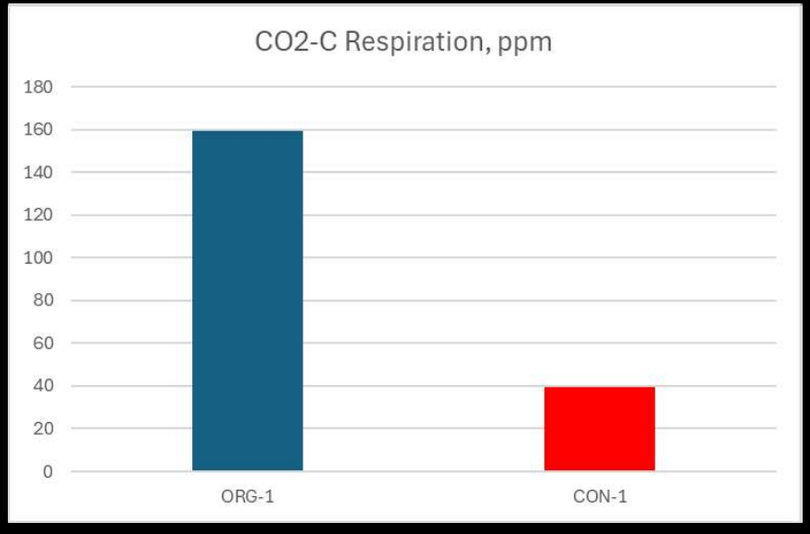


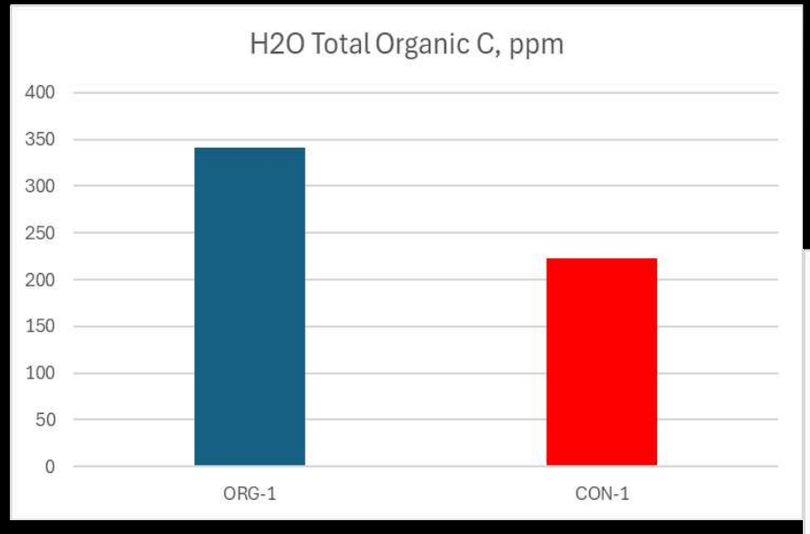
Sample ID	ORG Tree Row	CON Tree Row
Total Living Microbial Biomass, PLFA ng/g	**4837.7**	**3188.67**
Functional Group Diversity Index	**1.447**	**1.381**
Total Bacteria, PLFA ng/g	2512.83	1212.31
Total Bacteria, % of Tot. Biomass	**51.94**	**38.02**
Gram Pos Others, PLFA ng/g	1055.51	545.8
Gram Pos Others, % of Tot. Biomass	21.82	17.12
Actinomycetes, PLFA ng/g	401.83	180.2
Actinomycetes, % of Tot. Biomass	**8.31**	**5.65**
Gram Neg Others, PLFA ng/g	1055.48	486.31
Gram Neg Others, % of Tot. Biomass	21.82	15.25
Total Fungi, PLFA ng/g	**498.57**	**198.92**
Total Fungi, % of Tot. Biomass	**10.31**	**6.24**
Mycorrhizal Fungi, PLFA ng/g	233.64	93.94
Mycorrhizal Fungi, % of Tot. Biomass	**4.83**	**2.95**
Saprophytic Fungi, PLFA ng/g	264.93	104.98
Saprophytic Fungi, % of Tot. Biomass	**5.48**	**3.29**
Protozoa, PLFA ng/g	20.78	2.47
Protozoa, % of Tot. Biomass	**0.43**	**0.08**
Undifferentiated, PLFA ng/g	1805.53	1774.98
Undifferentiated, % of Tot. Biomass	**37.32**	**55.67**
Fungi:Bacteria	**0.198**	**0.164**
Protozoa:Bacteria	0.008	0.002
Gram+:Gram-	1.381	1.493

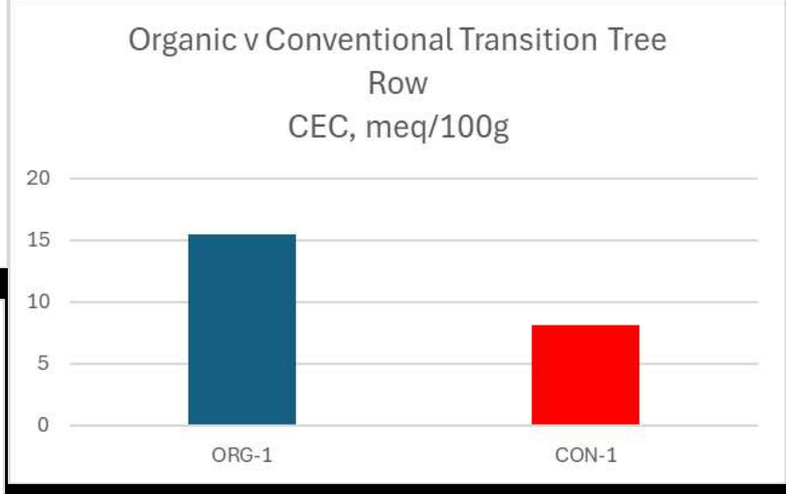
COMPARING TWO TREE ROWS ON THE SAME FARM

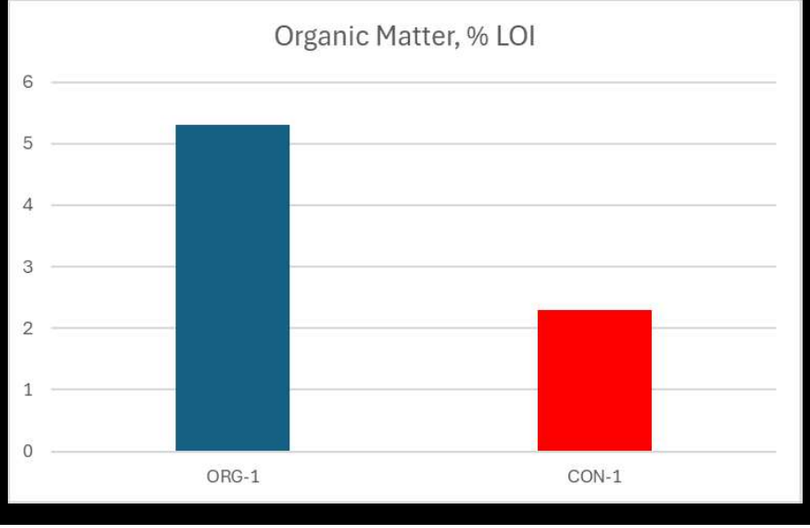
MULCH V NO MULCH

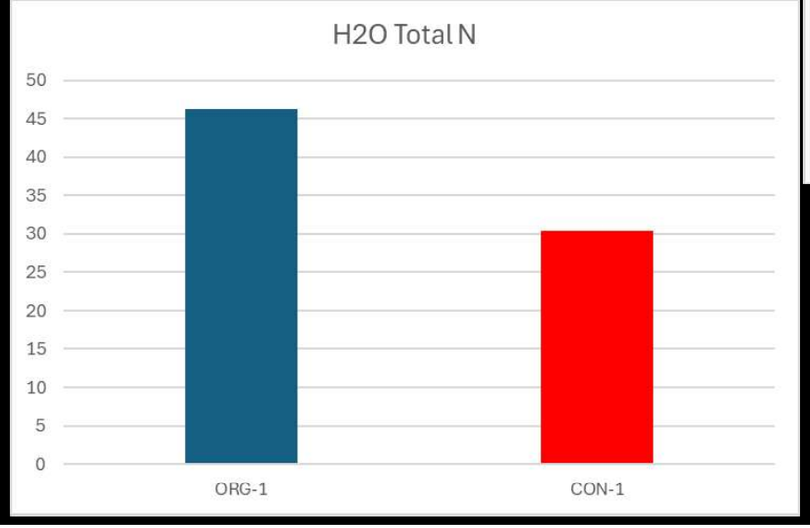
ORGANIC VS CON. TRANSITION











Ensuring NO Vigor Loss
Advancing Nutrition for Successful Transition

- Optimize Plant Nutrition
- The Power of Sap Testing
- Biostimulants: Biological and Carbon based nutrition – Enhance nutrient availability and nutrient cycling
- Always add a carbon source to your fertility inputs
- Managing Micronutrients – the X-factor in optimizing nutrition and solving many problems
- DO NOT SKIP on nutrition in Year 1- ENHANCE NUTRITION
- Greatly reducing high salt index based fertilizers
- Reduce dry fertilizer – Increase liquid fertility through drip and foliar

REDUCING HIGH SALT INDEX FERTILIZERS

REDUCE

Nitrogen-based Fertilizers:
- Ammonium Nitrate
- Urea Ammonium Nitrate
- Anhydrous Ammonia

Potassium-based Fertilizers:
- Potassium Chloride (Muriate of Potash)
- Potassium Nitrate

Phosphorus-based Fertilizers:
- Monoammonium Phosphate (MAP)
- Diammonium Phosphate (DAP)

INCREASE

- **Organic Forms of Nutrients**
- **Biostimulants**
- **Lower Salt Index Fertilizers**
  - Urea
  - Potassium Acetate
  - Sulfate of Potash
- **MicroNutrients**
- **Less Soil Applied – MORE FOLIAR**
- **Manage for Nutrient Cycling**

UnderstandingAG

SOIL HEALTH ACADEMY®

On Farm Biofertility

- Compost Teas – Liquid Biological Amendment
- Foliar Spraying – Biopesticide and Nutrients
- Root Dip and Seed Treatment
- BioStimulation

Stimulate Plant Immunity

Bionutrient Brew and Tea Recipe

- Generalized recipe or used as base
- Boost microbial foods and nutrient cycling
- 5-20 gal per acre

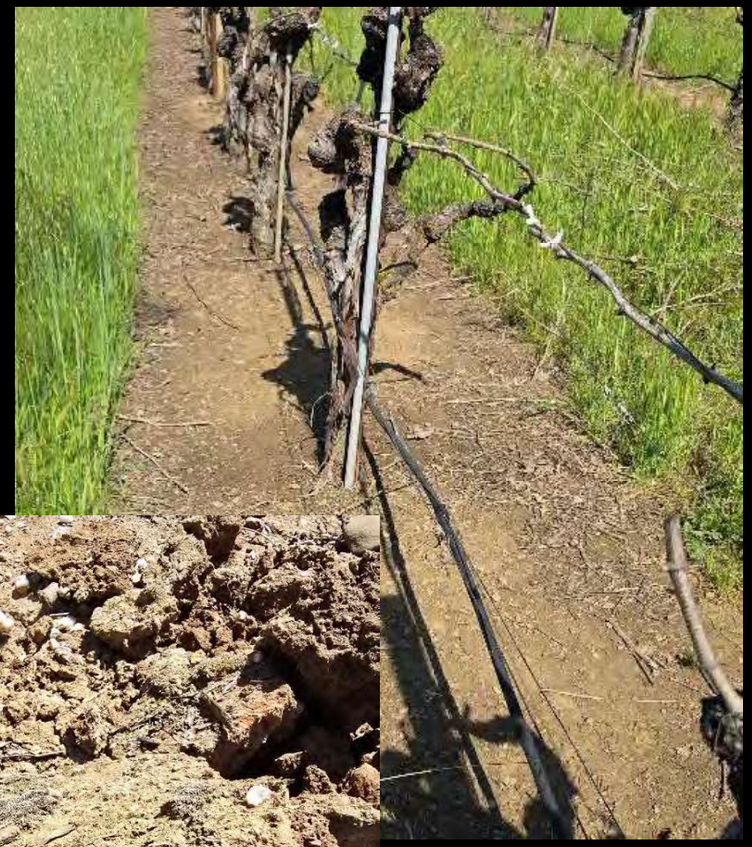
Compost Tea Recipe (250-Gallon Batch)

Ingredient	Amount
Non-chlorinated water	250 gallons
Humic acid	2 cups
Unsulfured molasses	3 cups
Fish hydrolysate	2 cups
Kelp extract	5 cups
Fermented plant extract	1 cup
High-quality compost (or worm castings)	20 lbs
Liquid microbial inoculant ('microbes in a jug')	1 gallon

BIONUTRIENT BREW INJECTION

Critical in Yr 1 Transition to fix vine row soil

- High Rates of Fulvic and Humic
- Silica Soil Applied
- Aminos



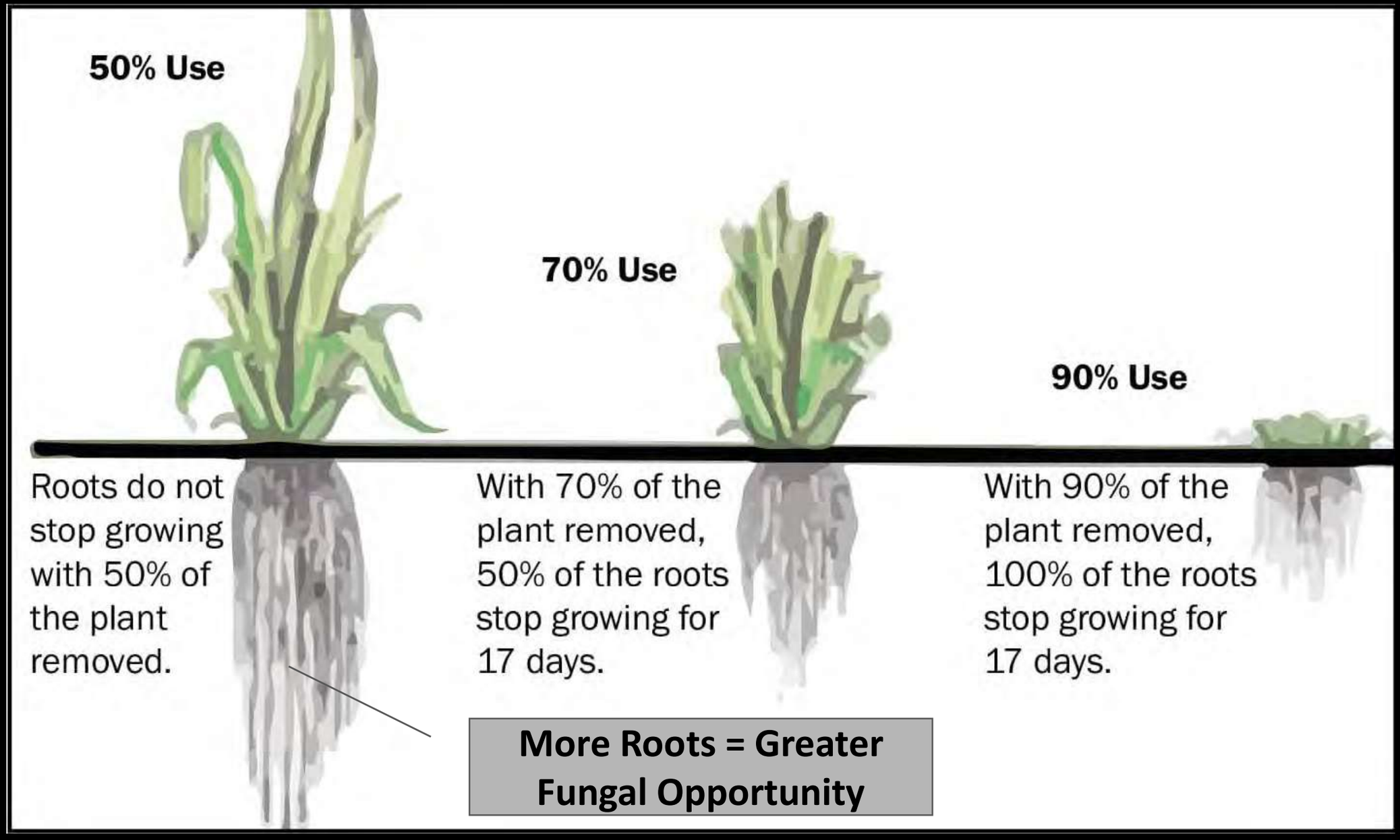
Livestock & Animals

Powerful Ecosystem Service Providers

- Stack Enterprise and Farm Diversity
- Enhance Vegetation Production – Carbon Managers
- Increase soil microbiome
- Nutrient Cyclers
- Increase leaf decomposition and residue cycling
- Pest Larvae Scavengers

DISEASE AND PEST MANAGEMENT SQUAD!

UnderstandingAG


50% Use
70% Use
90% Use
Roots do not stop growing with 50% of the plant removed.
With 70% of the plant removed, 50% of the roots stop growing for 17 days.
With 90% of the plant removed, 100% of the roots stop growing for 17 days.
More Roots = Greater Fungal Opportunity

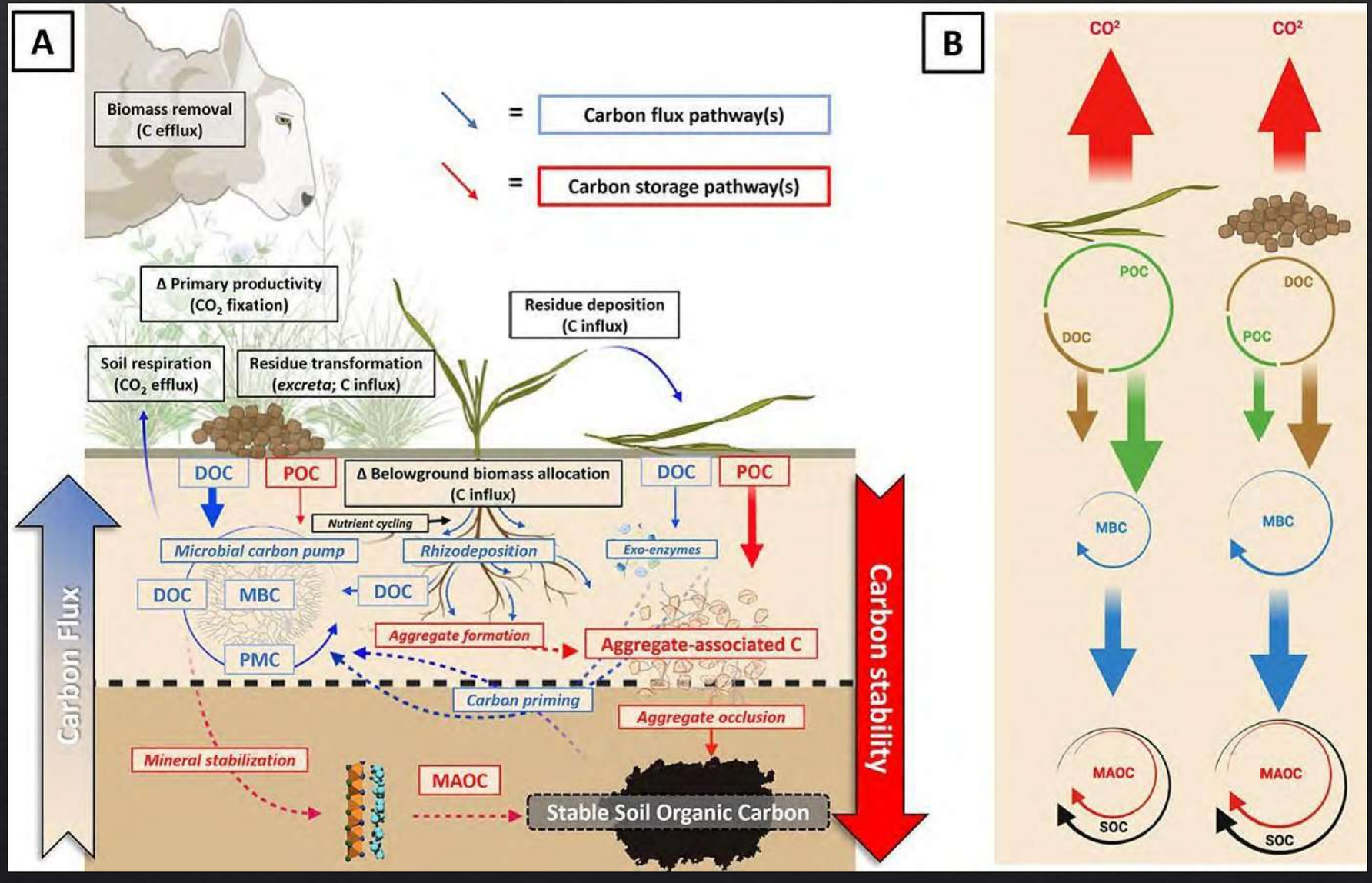
Grazing – How Much to Graze and Leave?

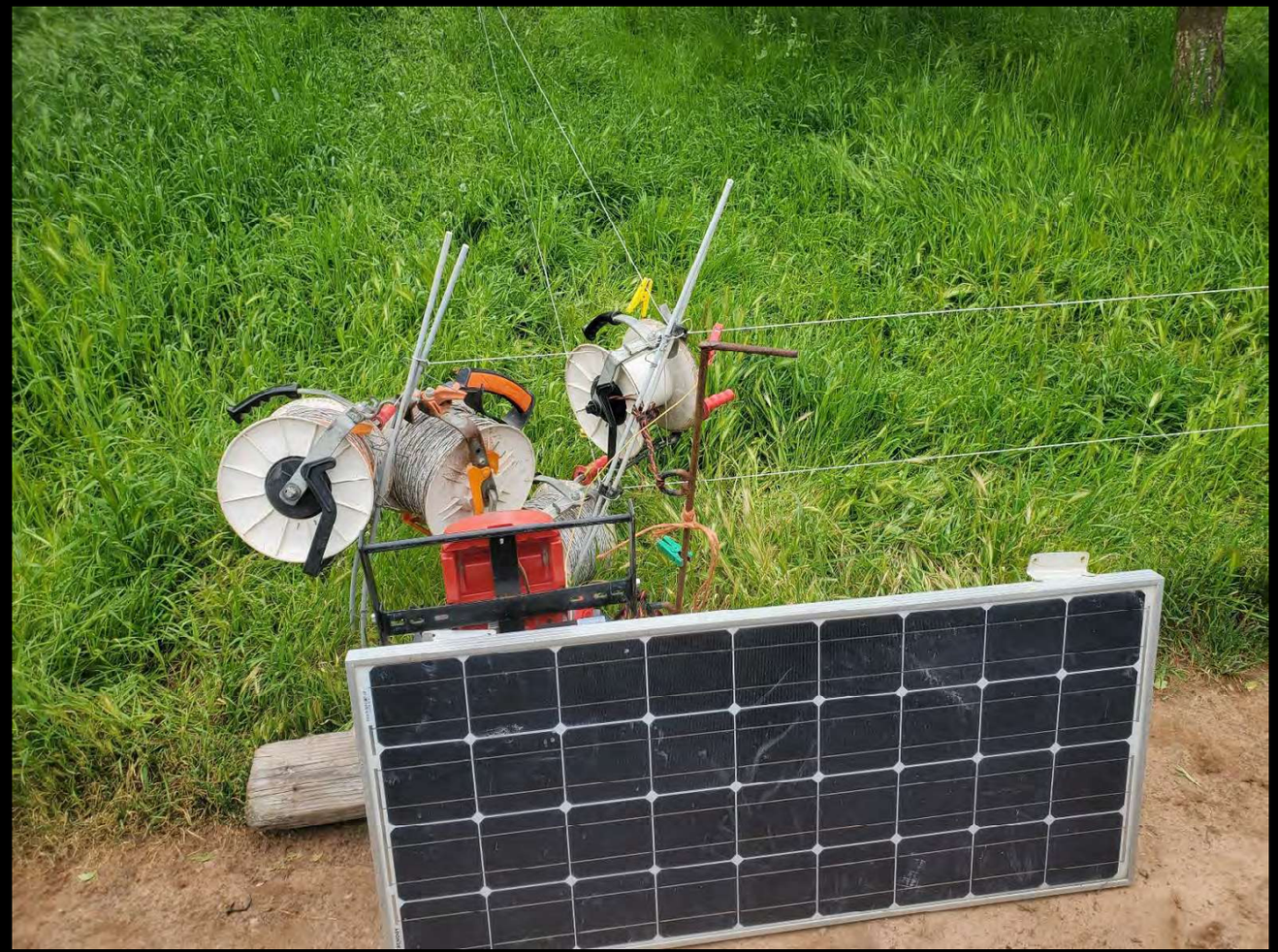
UnderstandingAG

High Density Sheep Grazing

Priming the Pump Before Planting

Livestock Cycle Organic Nutrients





UnderstandingAG

NOT RREGEN OR HOLISTIC GRAZING

UnderstandingAG

New Plantings Standard Approach

Central Valley, Table Grapes

WSU Apple
Soil Health Project Replant

Ecosystem Processes Already Broken

- No ecological support from the beginning.
- Soil microbial symbiosis not present – No Fungi
- Stressed conditions
  - Heat
  - Evaporation

UnderstandingAG

SOIL HEALTH ACADEMY®

Vineyard Replant
A Regenerative Approach

Huichica Creek Vineyard
Napa Resource Conservation District

SOIL HEALTH ACADEMY®

Vineyard Establishment A Regenerative Approach

Thank You!

Identify your low hanging fruit

Chuck Schembre
Regenerative Ag Consultant

Certified Professional Soil Scientist

cschembre@understandingag.com

UnderstandingAG