

RANGELAND MANAGEMENT

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MISSION STATEMENT:

“The Best Defense Is A Good Offense”

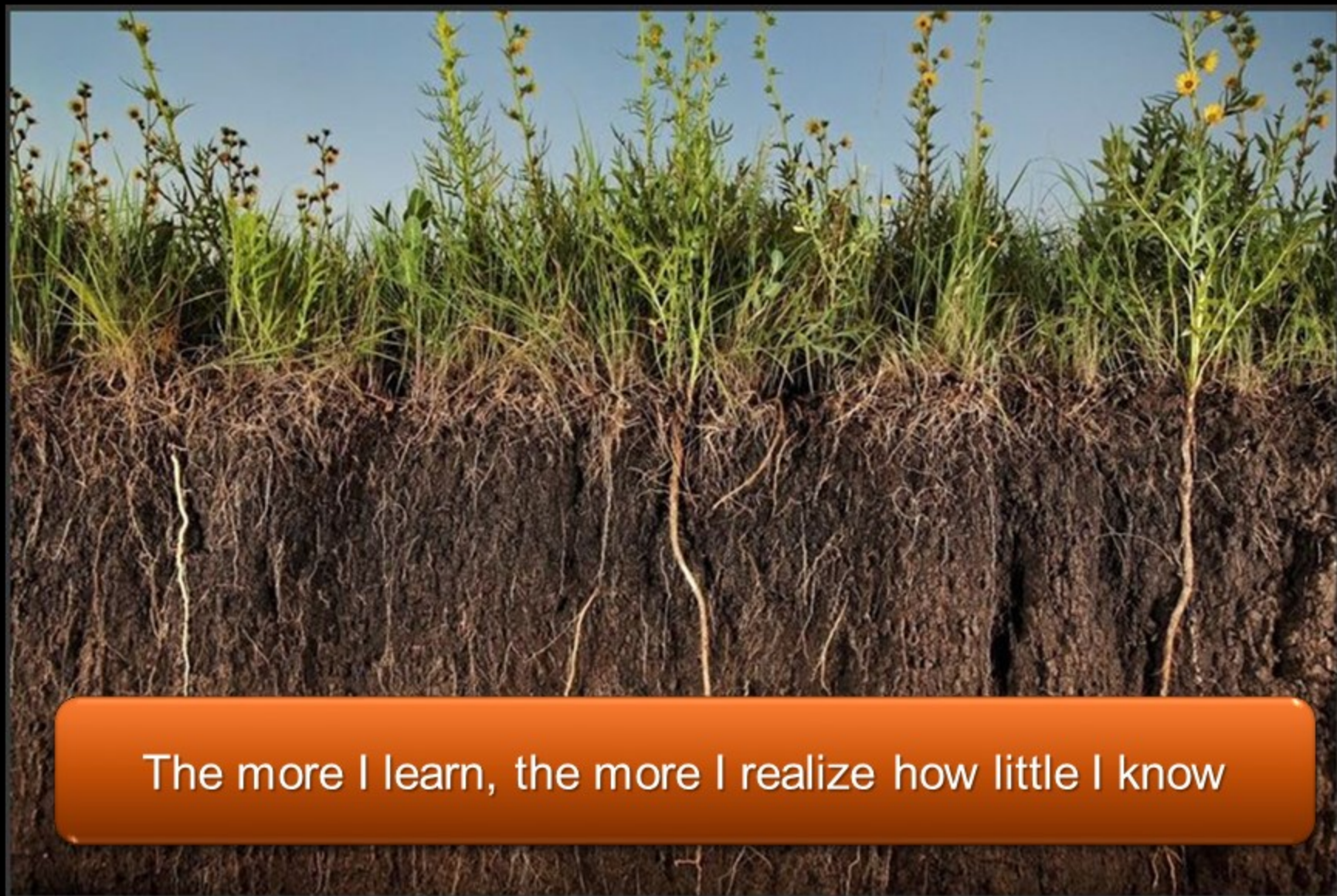


...Healthy Prairie

WHAT WE SEE



WHAT WE TRY TO UNDERSTAND



The more I learn, the more I realize how little I know

WHERE ARE WE GOING?

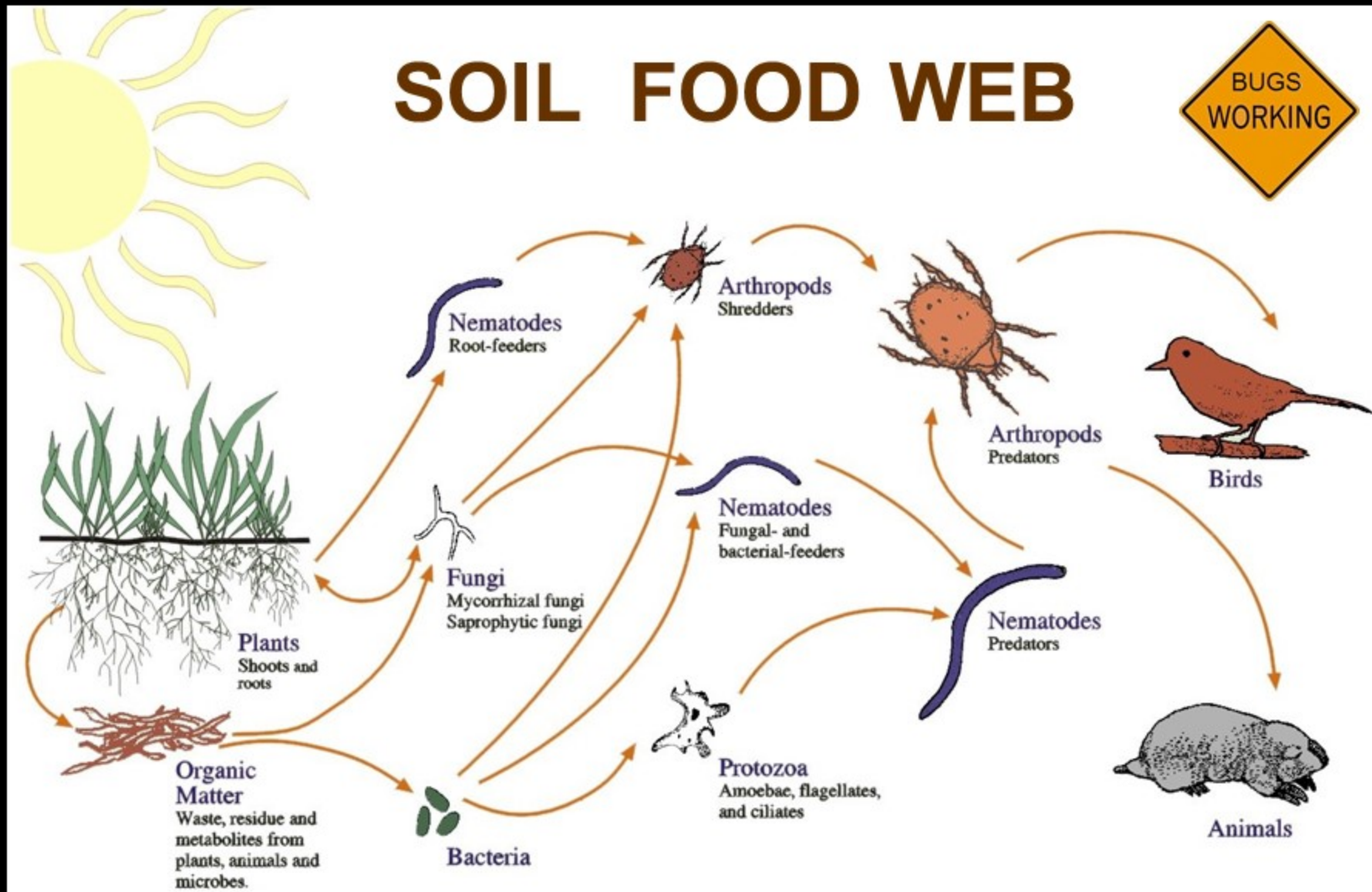
- **Offensive Strategies**
 - Soil Relationships (Minimize Bare Ground)
 - Optimizing Plant Growth (Healthy Prairie)
 - Plant Identification

- **Defensive Strategies**
 - Stay on Offense
 - Invasive Species Control

OFFENSE:
SOIL RELATIONSHIPS

SOIL LIFE

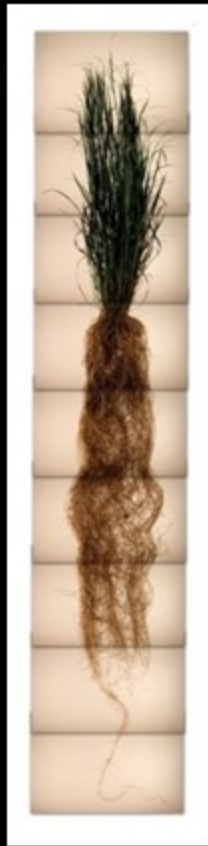
SOIL FOOD WEB



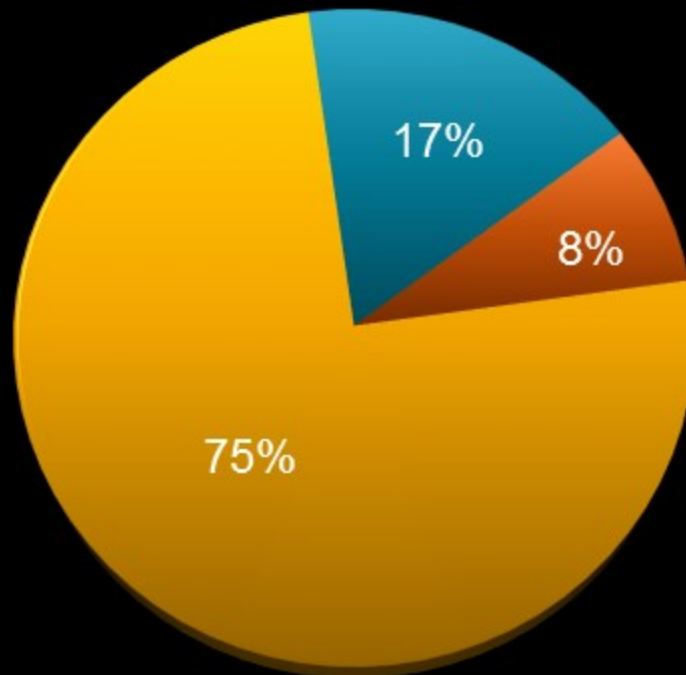
BELOW - GROUND RELATIONSHIPS



Mycorrhizal fungi



Sources of Phosphorus (Big Bluestem)



- Mycorrhizal mediated
- Mycorrhizal interplant
- Nonmycorrhizal

Interplant transfer
up to 19.7 inches

Greenhouse Study: Dependence on mycorrhizal symbiosis

Non-Sterile
+ Mycorrhizal fungi



Sterile
- Mycorrhizal fungi



Native: Big Bluestem
Andropogon gerardii

Non-Sterile
+ Mycorrhizal fungi

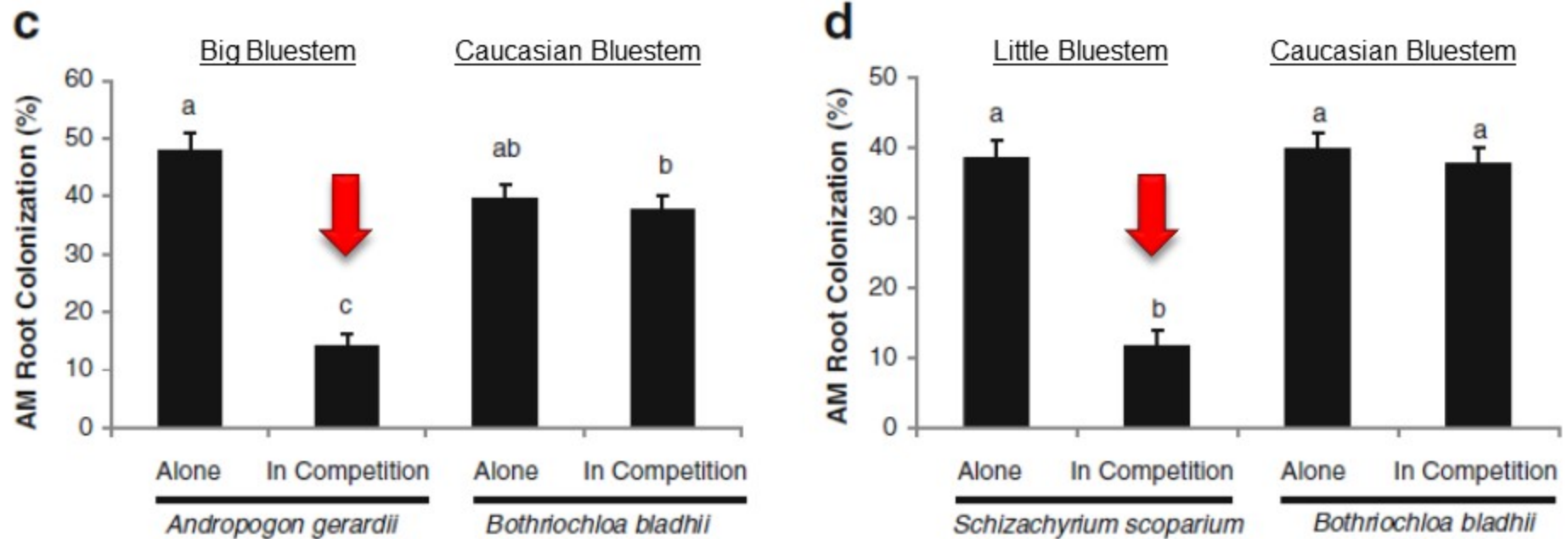


Sterile
- Mycorrhizal fungi

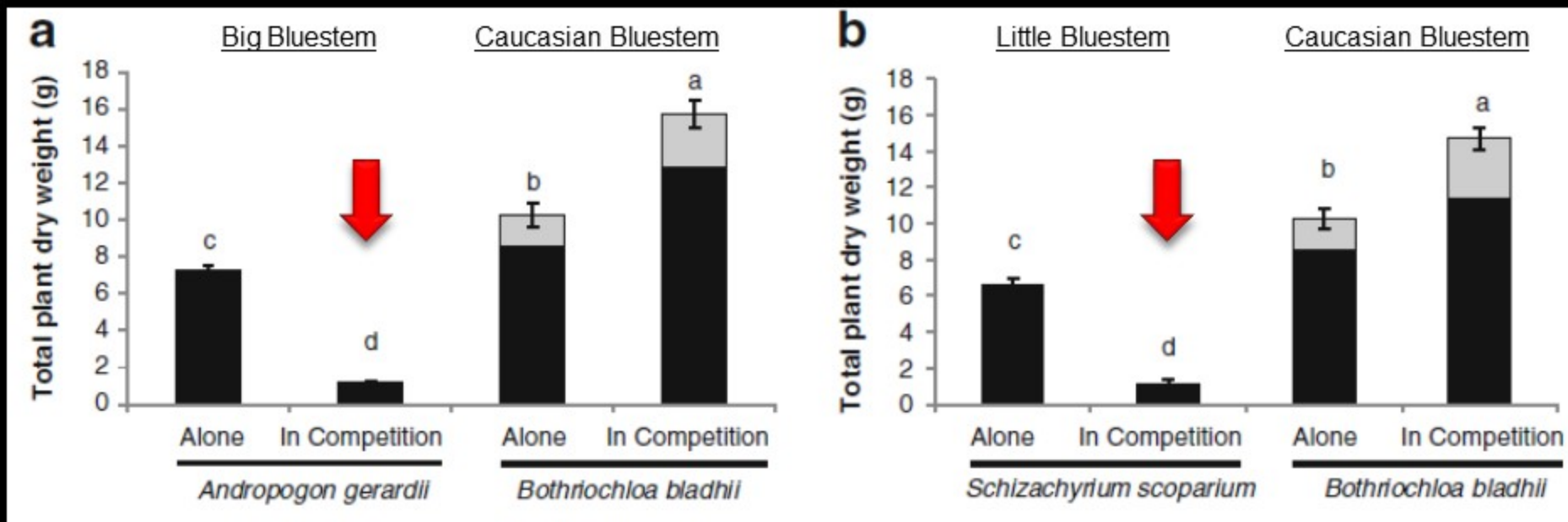


Exotic: Old World Bluestem
Bothriochloa sp.

- Mycorrhizal colonization of plants grown alone or with Caucasian Bluestem.



- Production of plants grown alone or with Caucasian Bluestem.

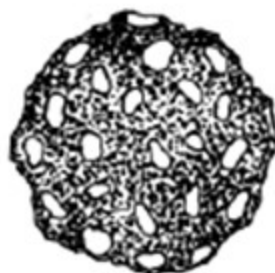


Soil Aggregate Stability

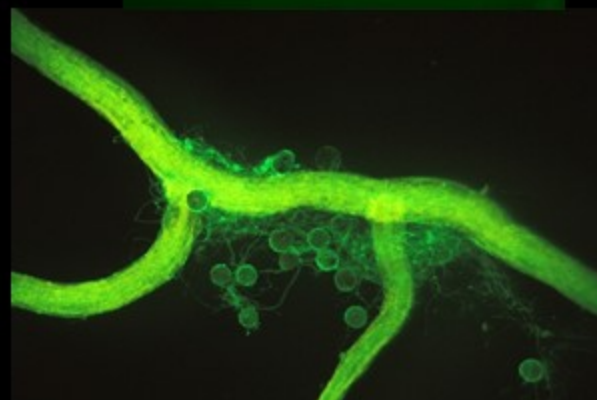
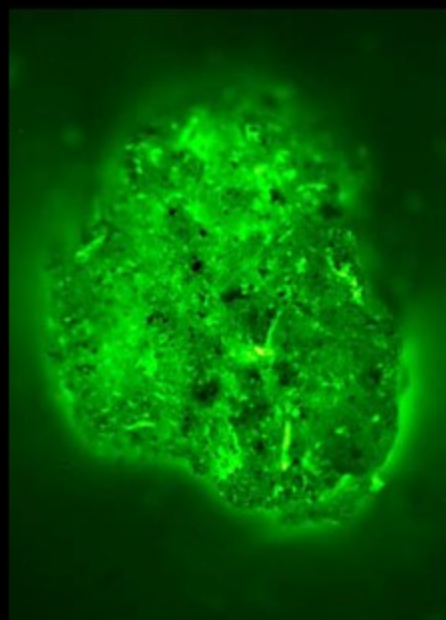
MICROBIAL AND FUNGAL
BYPRODUCTS GLUE
THE PARTICLES TOGETHER



DISPERSED STATE



AGGREGATED STATE



Glomalin is a Glycoprotein (sugar protein)

- Coats and protects hyphae
- Deposited on organic matter and soil particles
- Hydrophobic (water hating)
- Holds soil particles together

Old World Bluestem Monocultures

Soil Erosion Concerns

Lack of Diversity?



Photo Credit: Walt Fick, KSU



EXAMPLE



THOUGHTS

- Minimize Bare Ground
 - Problem Areas
 - Pond dams
 - Cattle trails
 - Sediment deposits in draws
 - Mineral & feed sites

- Don't give OWB plants an open door.
Once they are in...they don't play well with others!

OFFENSE:
OPTIMIZING PLANT
GROWTH/HEALTH

TALL GRASS PRAIRIE



Fire



Weather / Climate



Grazing

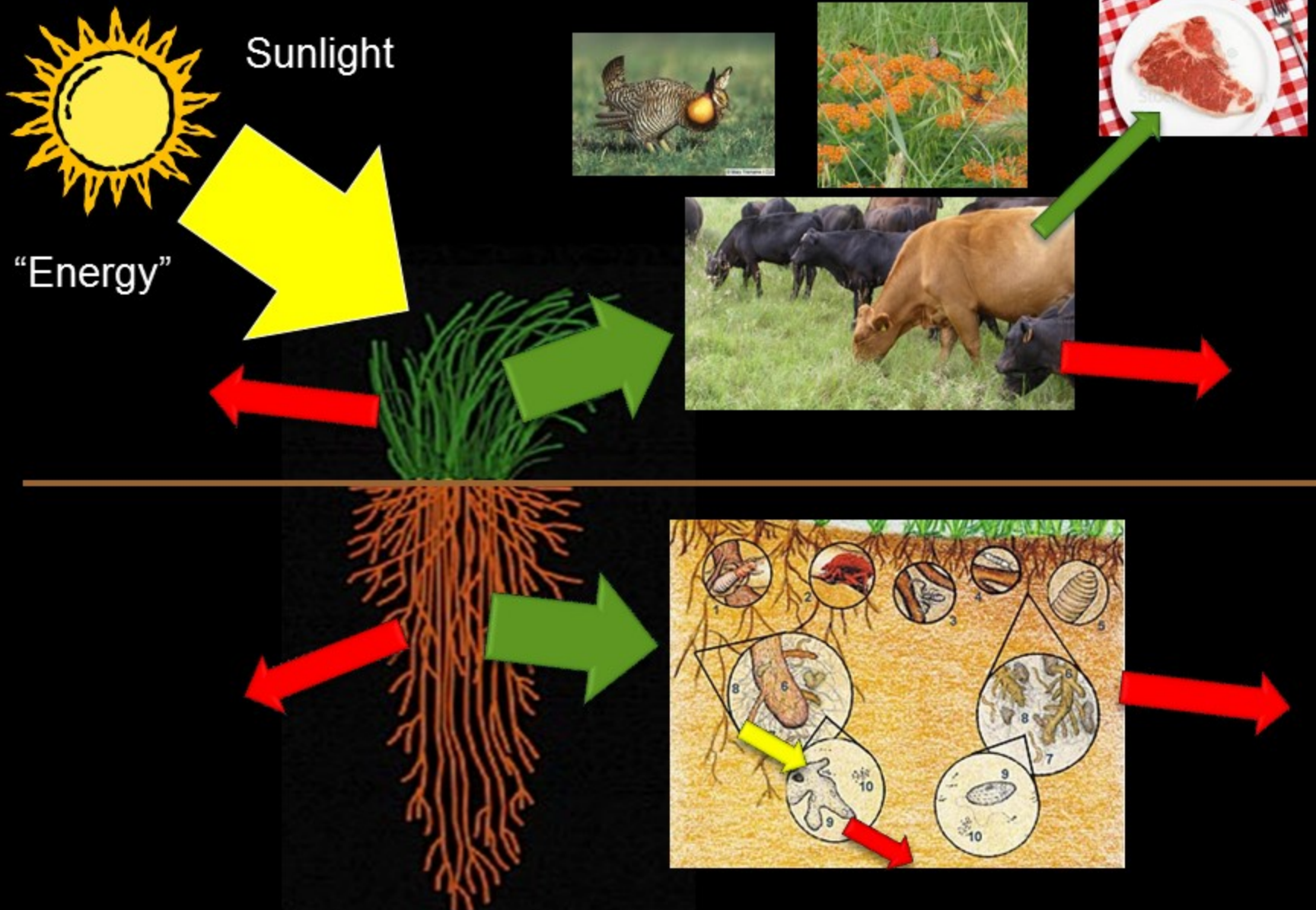
Energy Capture – Solar Panel



“Pasture management is really leaf management!”

Grass: The Stockman's Crop

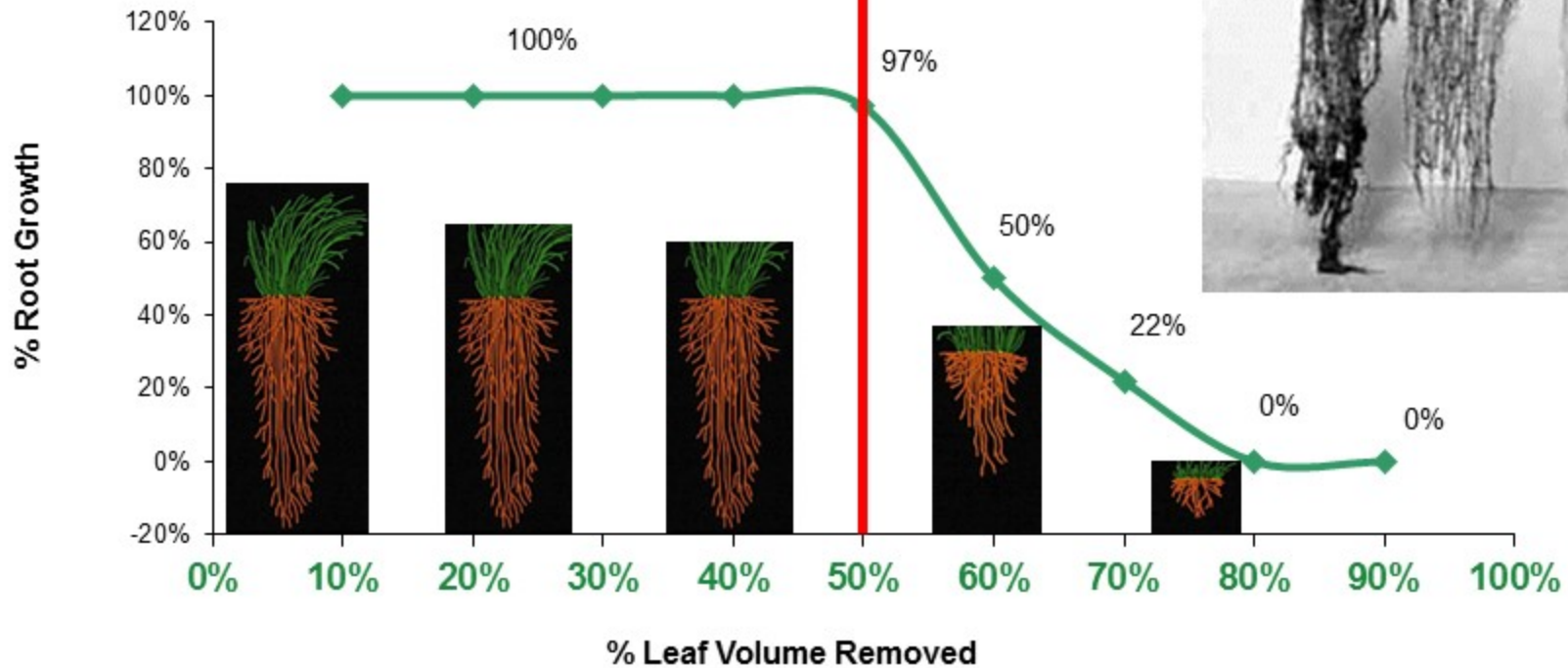
ENERGY CAPTURE & FLOW



Grass Root Growth



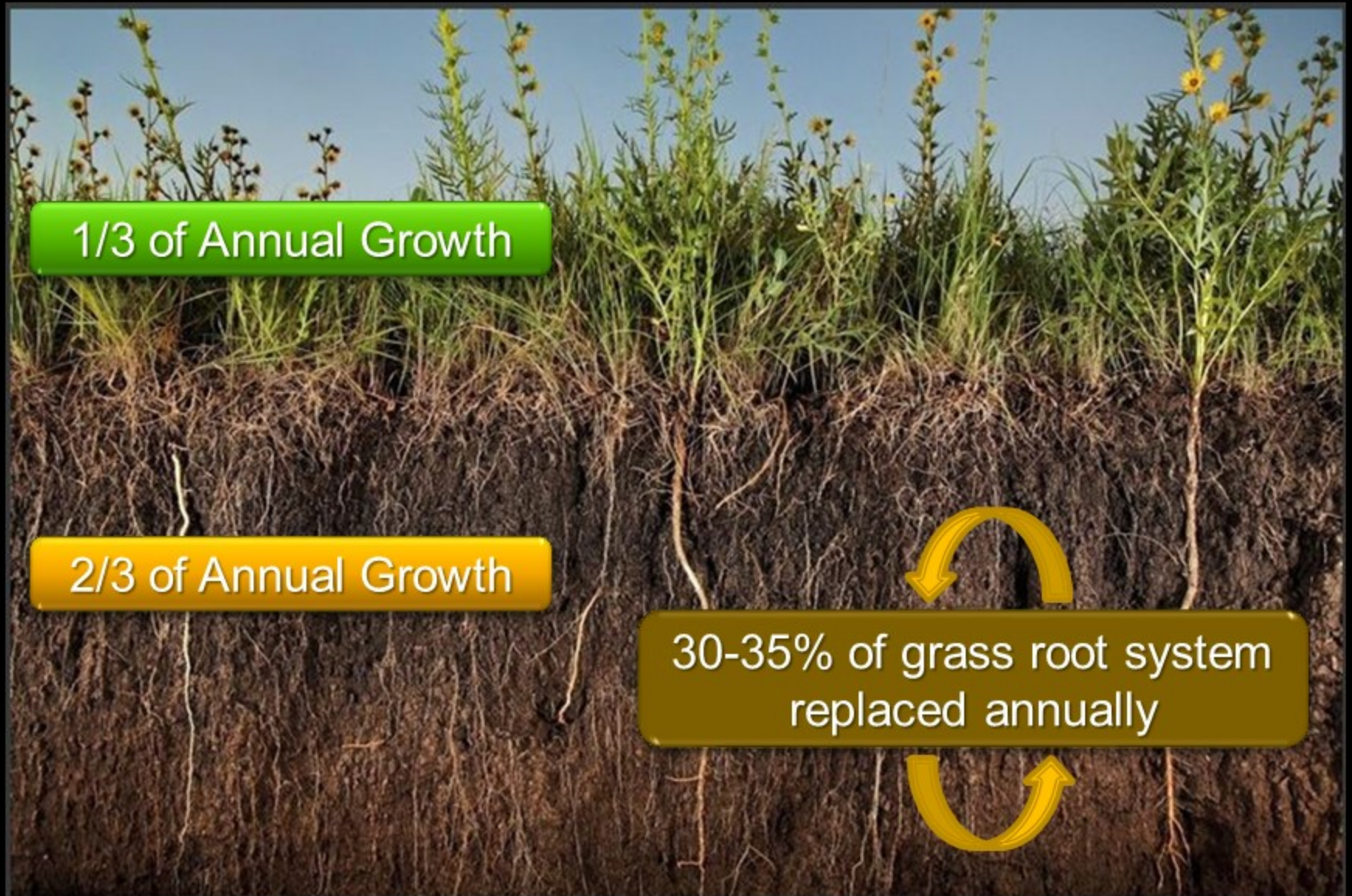
Grazing Affects on Grass Root Growth



Take Half, Leave Half

80% removal = 12 days w/ no root growth
90% removal = 18 days w/ no root growth

MAINTAINING THE PRAIRIE

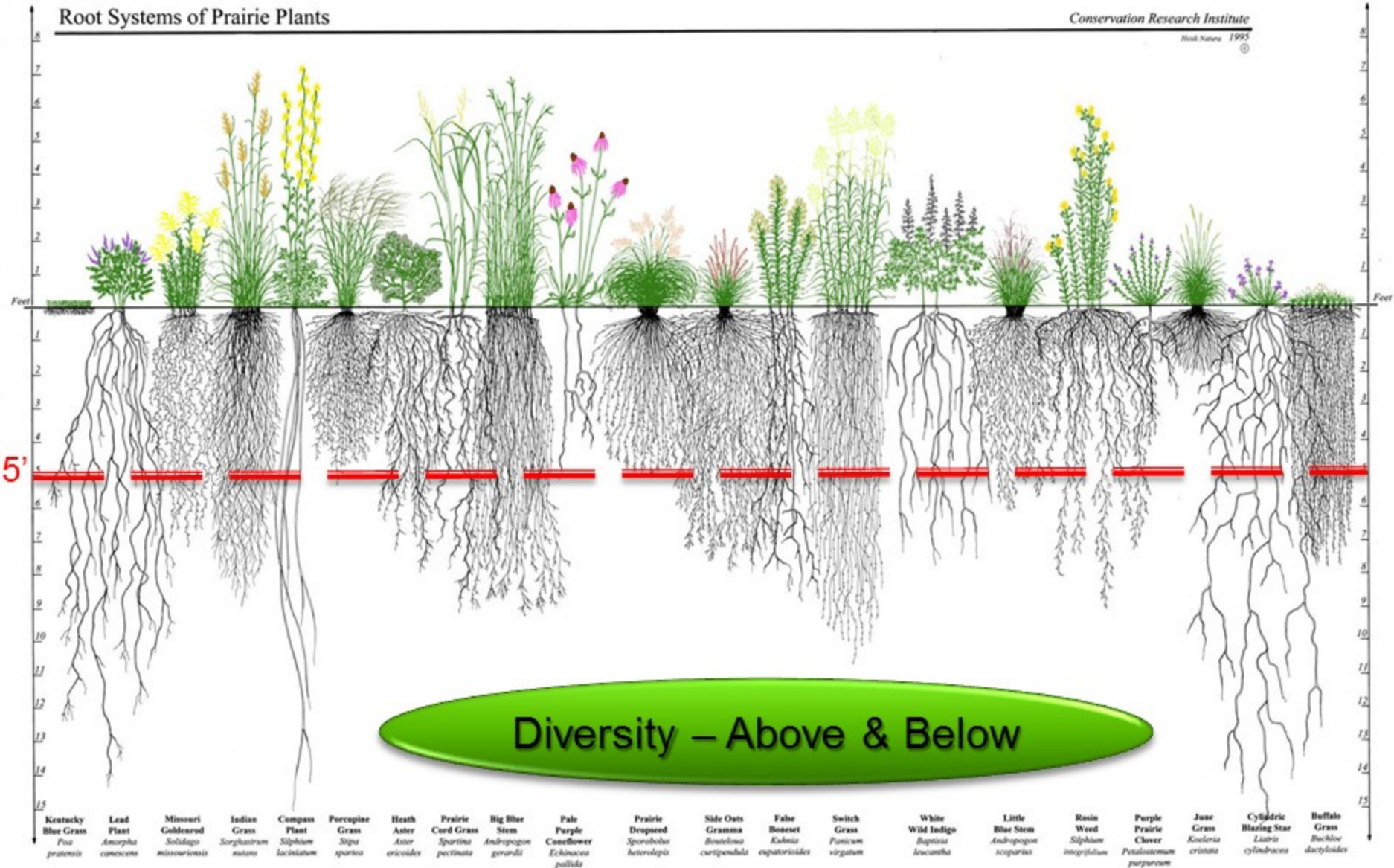


COMMUNITY GROWTH

Root Systems of Prairie Plants

Conservation Research Institute

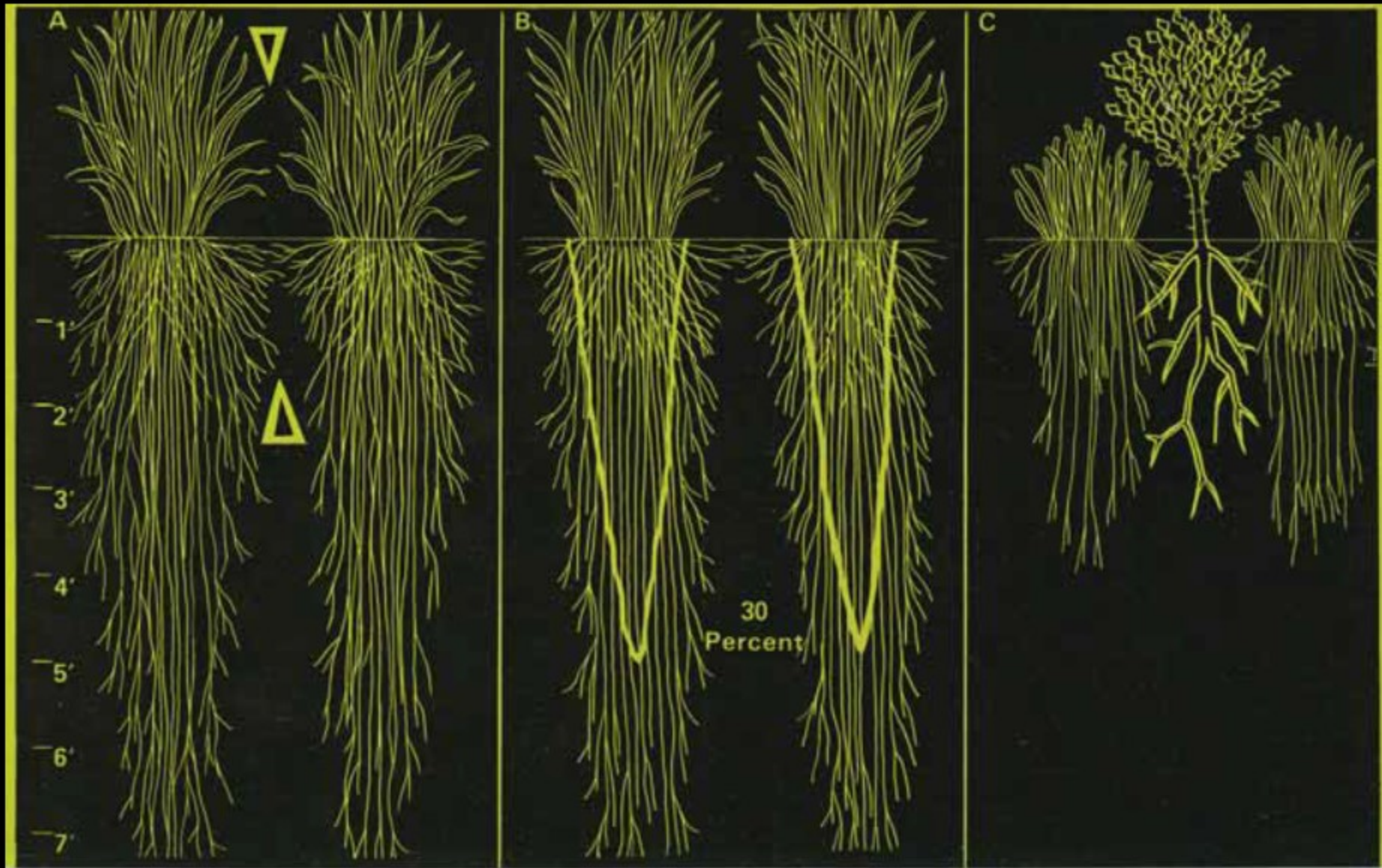
Wild Nature 1995



WHAT HAS THE ADVANTAGE?



A weak prairie system



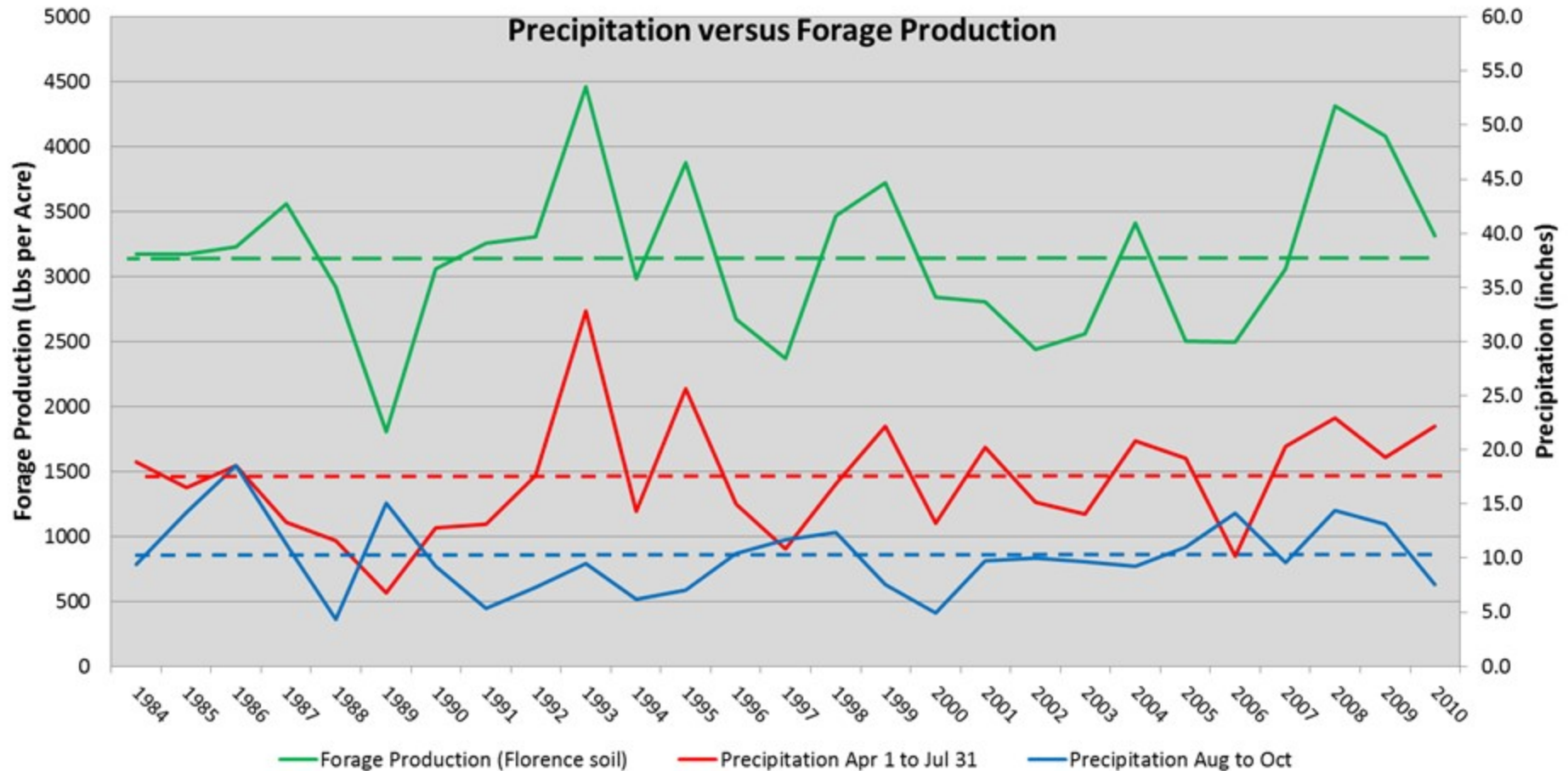
ABOVE
GROUND



Native Grass

BELOW
GROUND?

RAINFALL VERSUS FORAGE GROWTH VARIABLE AMONGST YEARS



FLORENCE SOIL — AVERAGE = 3,142 LBS/ACRE

THOUGHTS

- Maintain a healthy plant community
 - Grazing Plan
 - Stocking Rates (Forage & Animal Balance)
 - Growing Season Rest Opportunities
 - Prescribed Burning
 - Timing & Frequency
 - Drought Plan
 - Monitor precipitation & forage growth
 - Have a written plan
 - Adjust grazing plan accordingly

OFFENSE:
PLANT IDENTIFICATION

Plant Identification



THOUGHTS

- **Improve Plant Identification Skills**
 - Both Native and Invasive ID
 - On-line resources
 - Field days
 - Range schools
 - Wildflower tours

- **Active Scouting**
 - Go looking for invasive plants...if you wait to stumble across them, you're already behind...
 - Time of year – when differences in plant color or structure are most apparent

OFFENSE SUMMARY

- Offensive Strategies
 - Soil Relationships (Minimize Bare Ground)
 - Optimizing Plant Growth (Healthy Prairie)
 - Plant Identification

“Unless commitment is made, there are only promises and hopes... but no plans.”

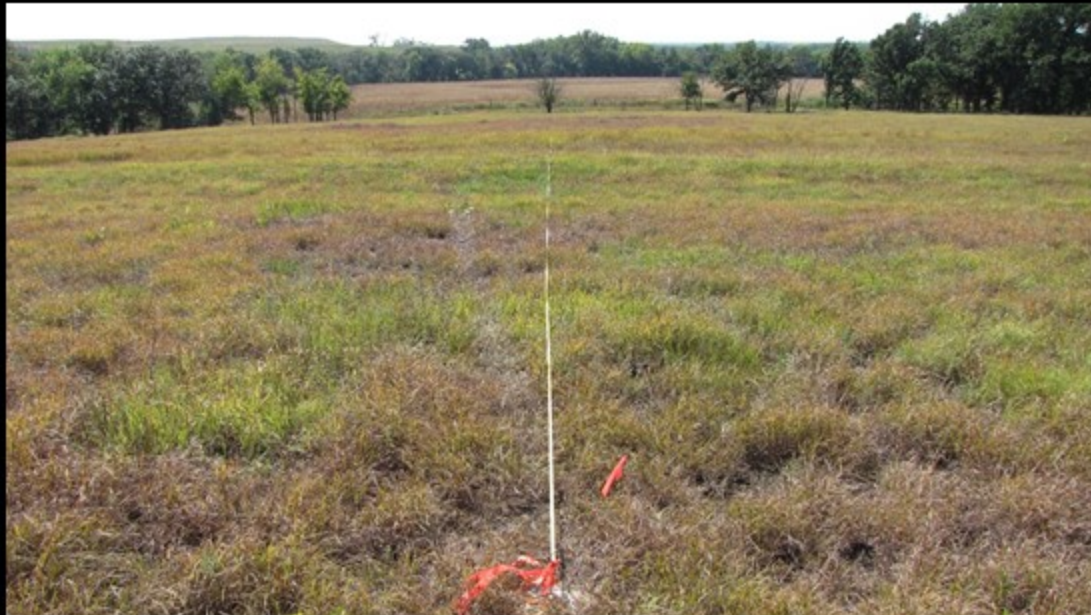
“Plans are only good intentions unless they immediately degenerate into hard work.”

Peter Drucker

DEFENSE

Respond & Control

- Attack early in the infestation stage and with force
- Follow established control guidelines to be most effective
- Eradication would be best, but not likely
- Minimum: Prevent seed production



Additional Strategies

- Know the source of feed supplement
 - Hay Forage Type
 - Location of Hayland (road ditch?)
- Use only native species if seeding disturbed areas
- Keep equipment clean when traveling from an infested pasture to a “clean” pasture



With Offense or Defense...



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