Regenerative grazing management

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Anders Lerberg Kopstad

Field Professional, Savory Institute Norway

MAHEPÕLLUMAJANDUSE KOOSTÖÖKOGU

Euroopa Maaelu Arengu Põllumajandusfond: Euroopa investeeringud maapiirkondadesse

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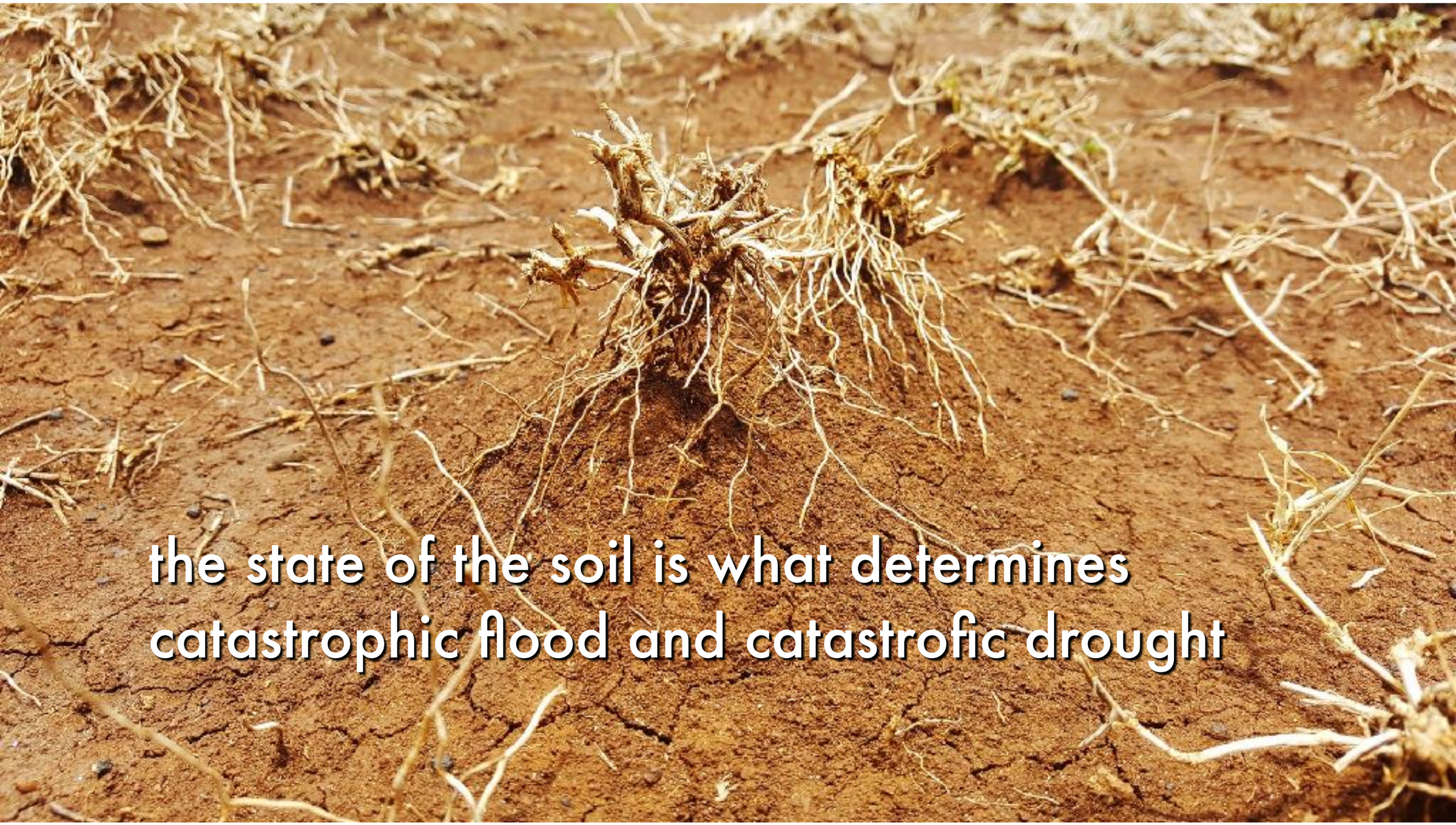
«If you don’t move with nature, nature will move you»

Native American proverb

NEWS

Large-scale ploughing in Ukraine results in more frequent dust storms

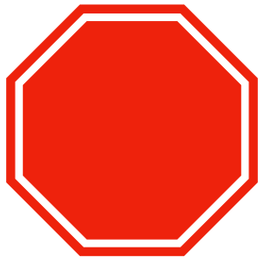
220 millimetres of rain overnight, MetService says


the state of the soil is what determines
catastrophic flood and catastrofic drought


NASA

Degenerate

Tear down
Mining
Eroding
Wither
Chronic



Conserve

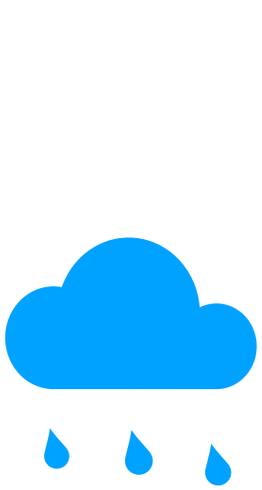
Stops any development.
Sustaining what is.

Regenerate

Stimulate and strenghten inate capacity to produce

The crop production year

Past and present annual cropping system



4 months photosynthesis

8 months bare soil

Input

Output

- All carbon removed
- High Evaporation
- Soil erosion
- High fossile energy demand
- Nutrient mining
- Albedo warming

All nutrients imported and exported

- No species diversity
- Ineffective photosynthesis
- Decease prone
- High risk
- Irrigation need
- Soil infertility
- Only external inputs

- All carbon removed
- High Evaporation
- Soil erosion
- Iron oxidation
- Eutrophication

Weather forcast

Torsdag 10. juni						16° / 12°	1,3 mm	6 m/s
Fredag 11. juni						16° / 12°	12 mm	8 m/s
Lørdag 12. juni						13° / 8°	13 mm	4 m/s
Søndag 13. juni						10° / 7°	11 mm	7 m/s
Mandag 14. juni						12° / 7°	12 mm	7 m/s
Tirsdag 15. juni						10° / 5°	11 mm	7 m/s
Onsdag 16. juni						9° / 5°	5,5 mm	6 m/s

What perspective do we see through when we think of agriculture?

Lineare

Reductionistic

Hierarcic

Systems

Static

Mechanistic

Complicated

Dynamic

Holistic
more than the sum

Distributed

Process

Interchangeable

Living

Complex

The Role of Ruminants

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Chauvet cave paintings, 35.000 BC

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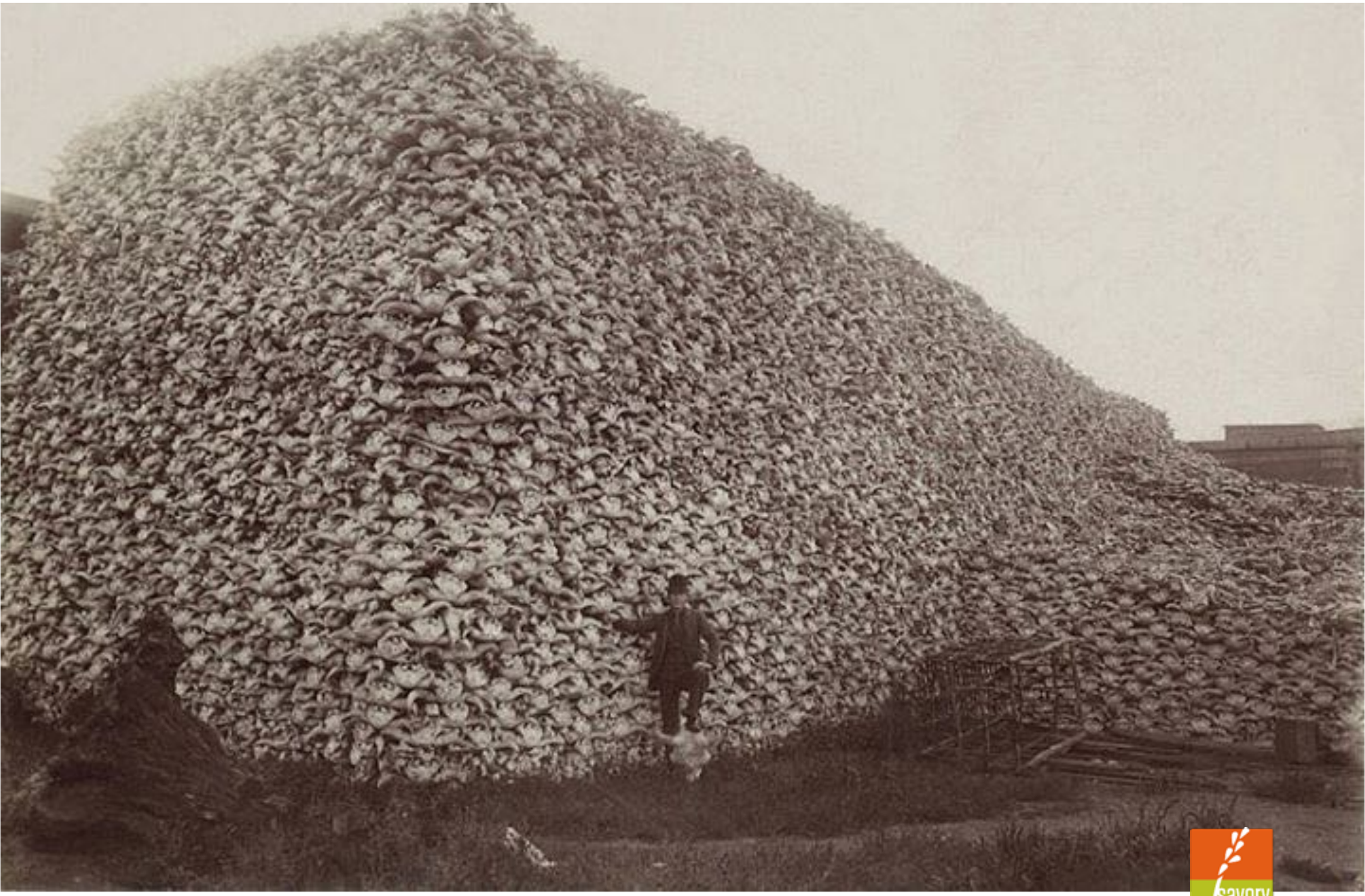
Bison sculpture of mammoth tusk 40.000 BC

Mammoth skull , Fåvang Norway




No animals
No grass
No soil

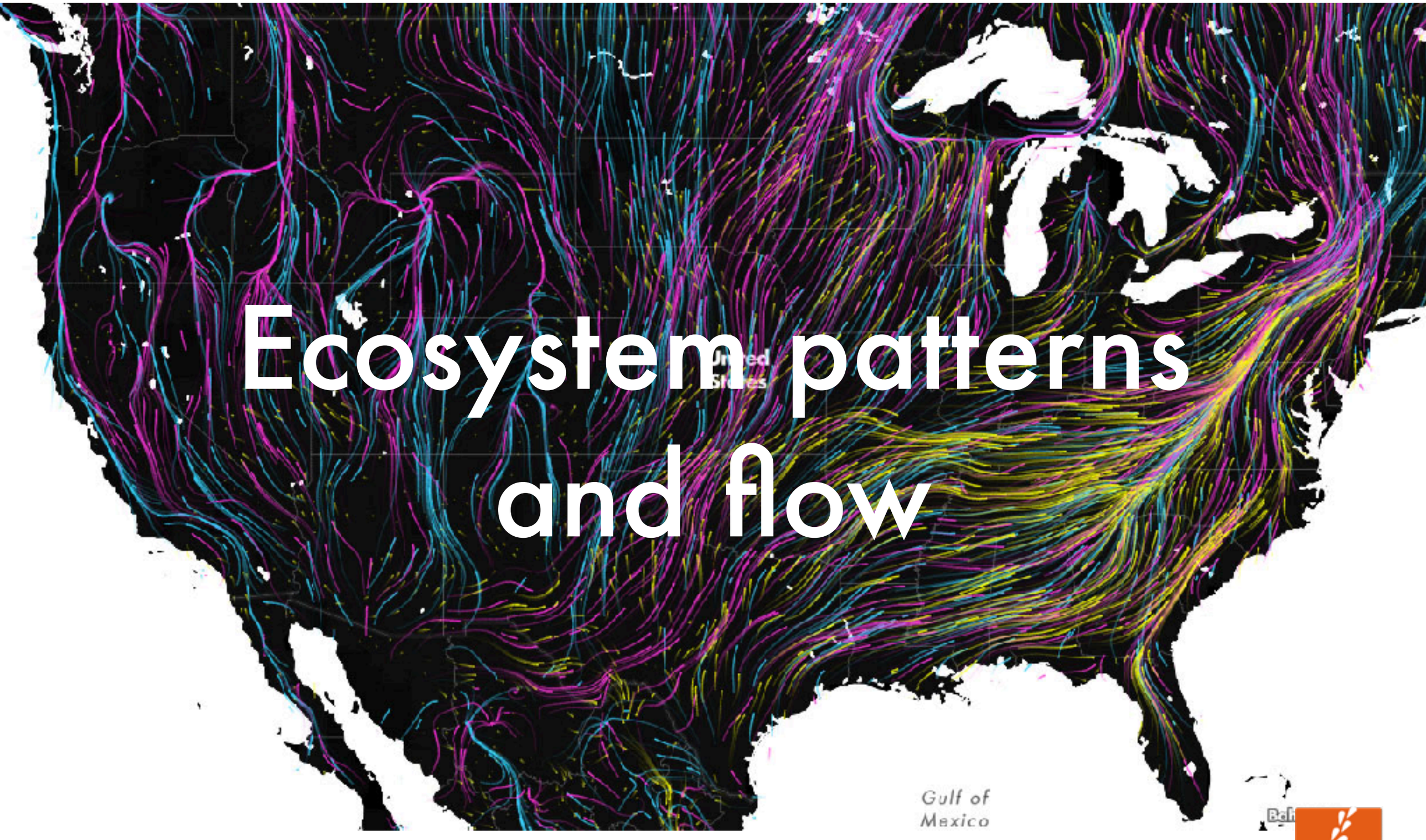
Cold ecoregions

Ruminants role is critical in seasonally dry and cold ecosystem..

Dry ecoregions

Predator/prey

Ecosystem patterns and flow



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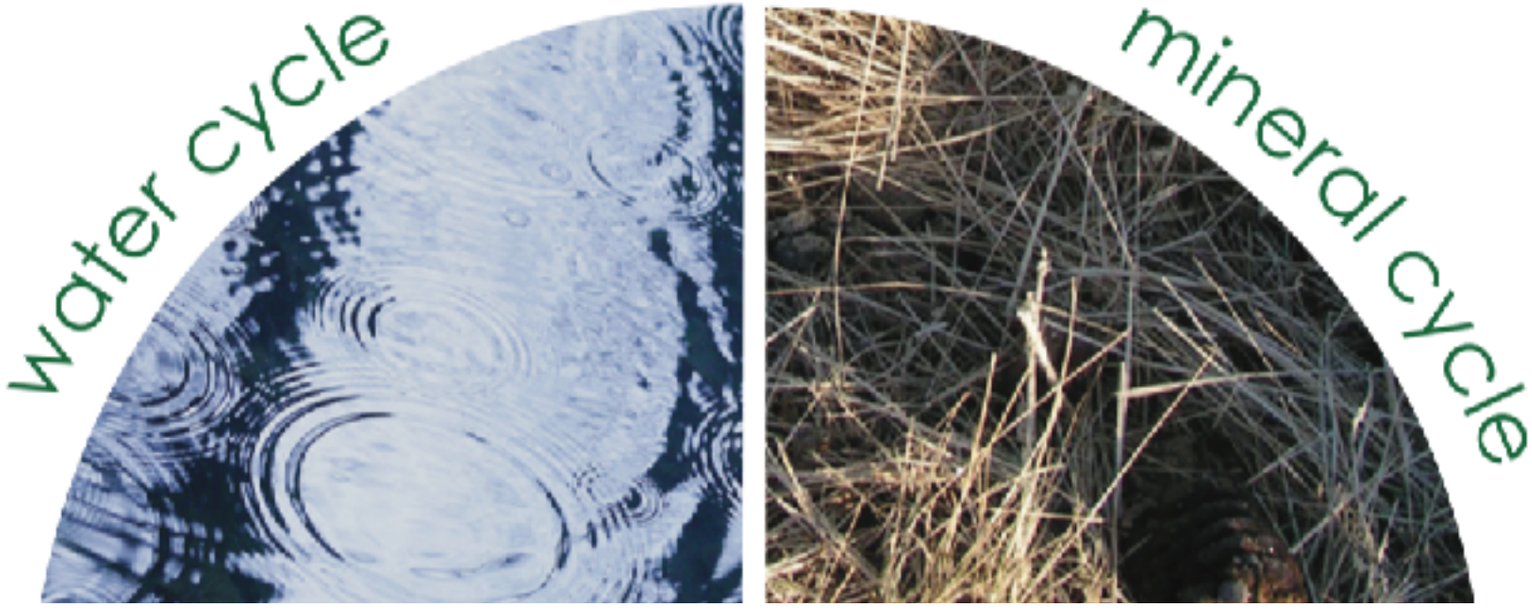
The planet is one ecosystem
How does it work?



Four ecosystem processes

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CO_2 Captured by plants
(Photosynthesis)

Evapotranspiration

CO_2 Released by plants
(Respiration)

CO_2 Released by animals
(Respiration)

Carbon Released by animals
(Decomposition & Manure)

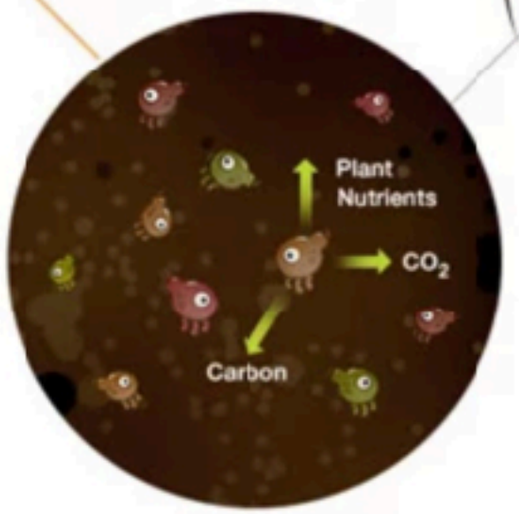
Plant Carbon

Carbon from plants get transferred to the soil via roots & decomposition.

Soil Carbon

Soil Organisms

Soil organisms are constantly processing the raw animal & plant carbon and releasing beneficial nutrients & pure carbon into the soil (the Carbon Bank).

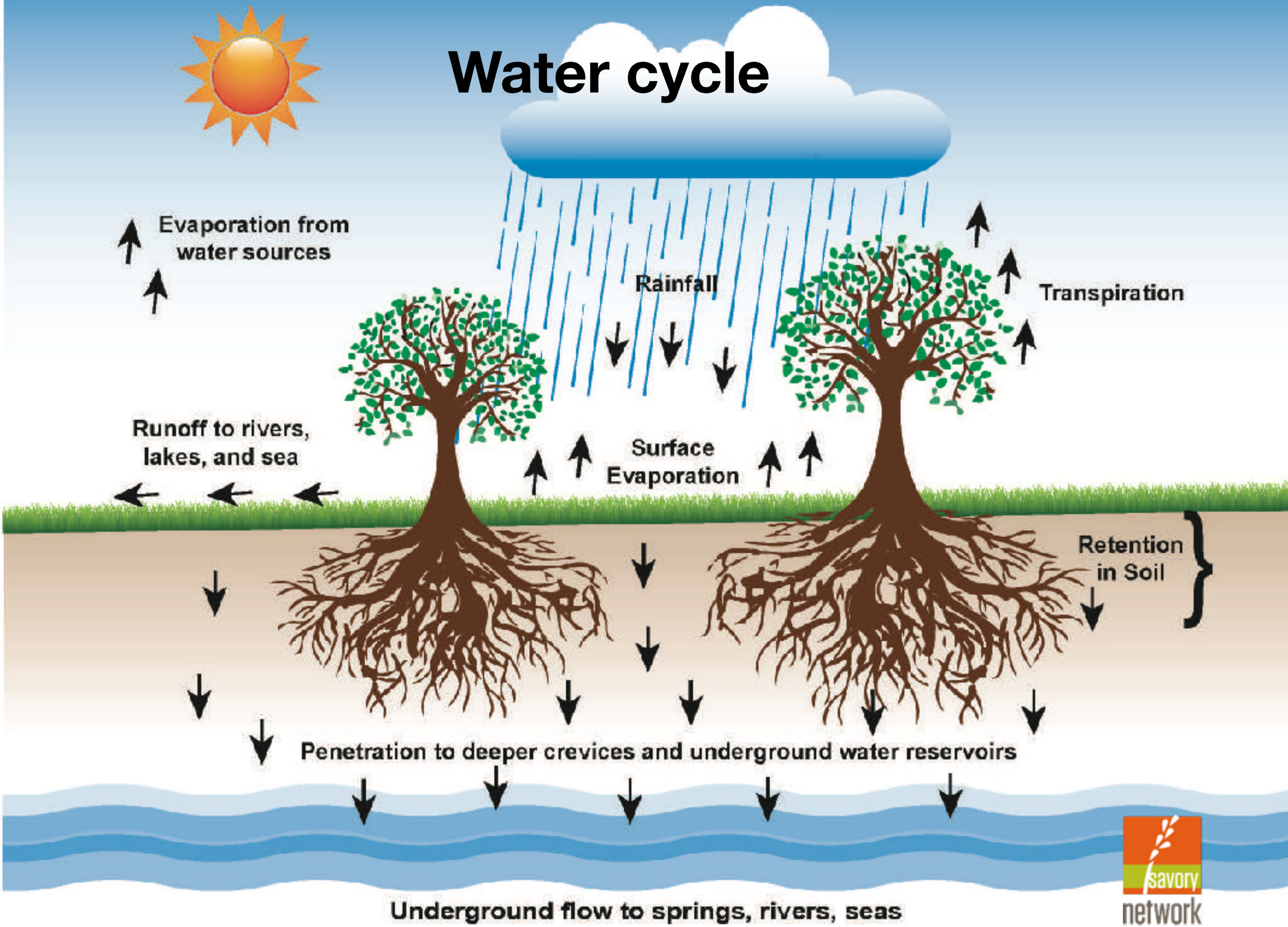


Carbon Bank

Soil acts much like a bank storing carbon and filling its vault as carbon deposits are made from plants & animals.

Groundwater recharge

Water cycle



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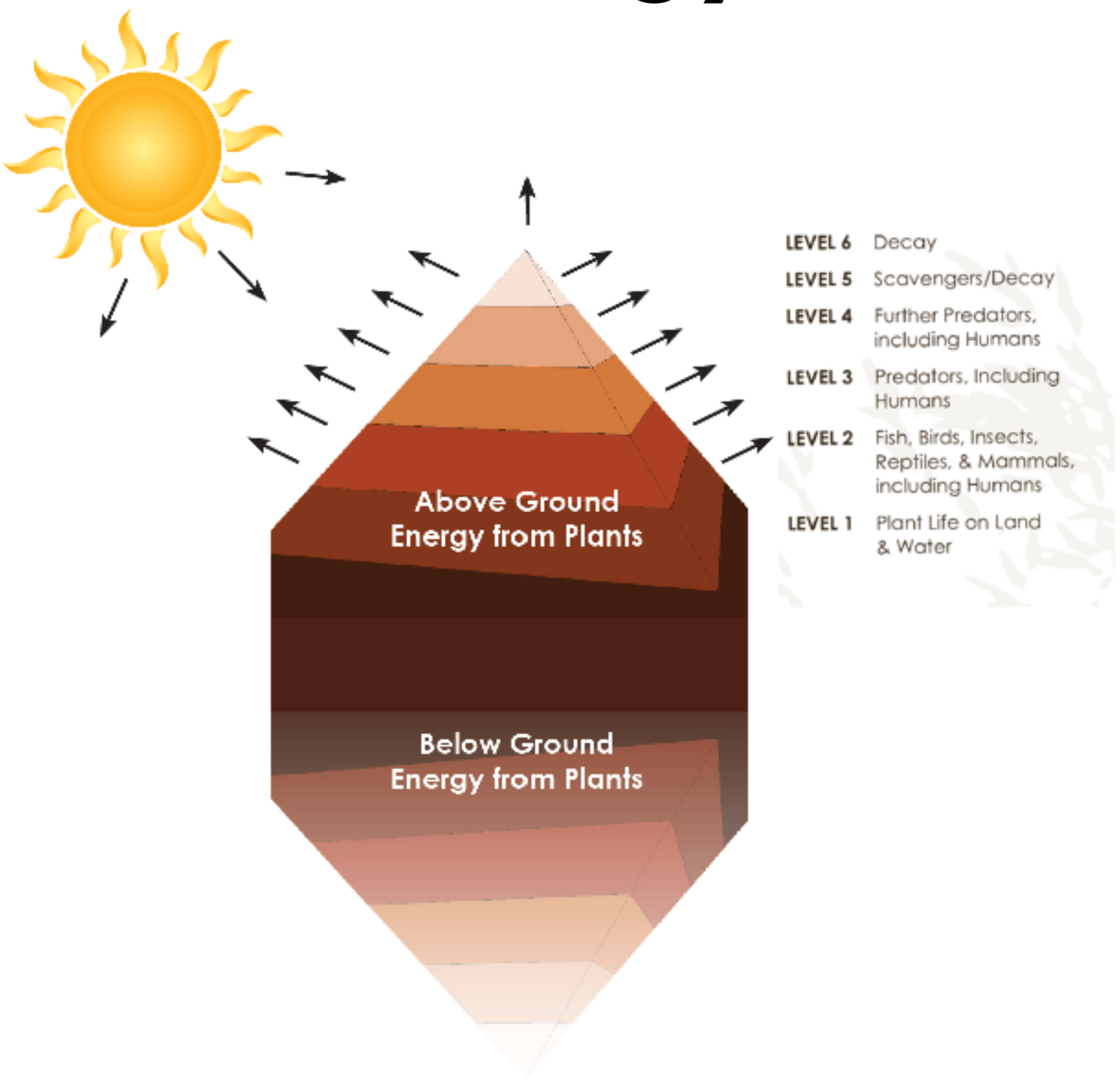
Conservation


Moss

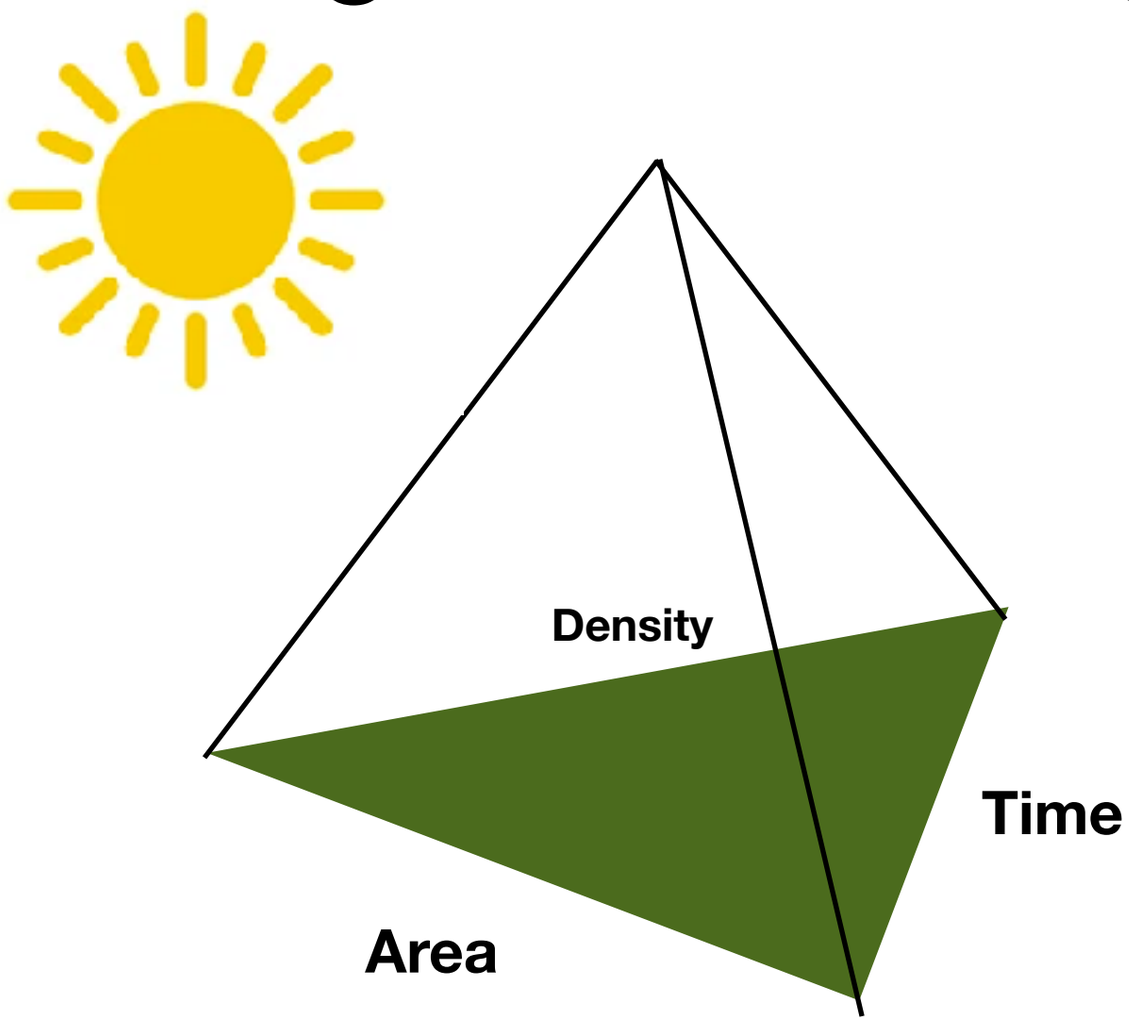
Soil cover

Solar energy flow

Solar Energy flow



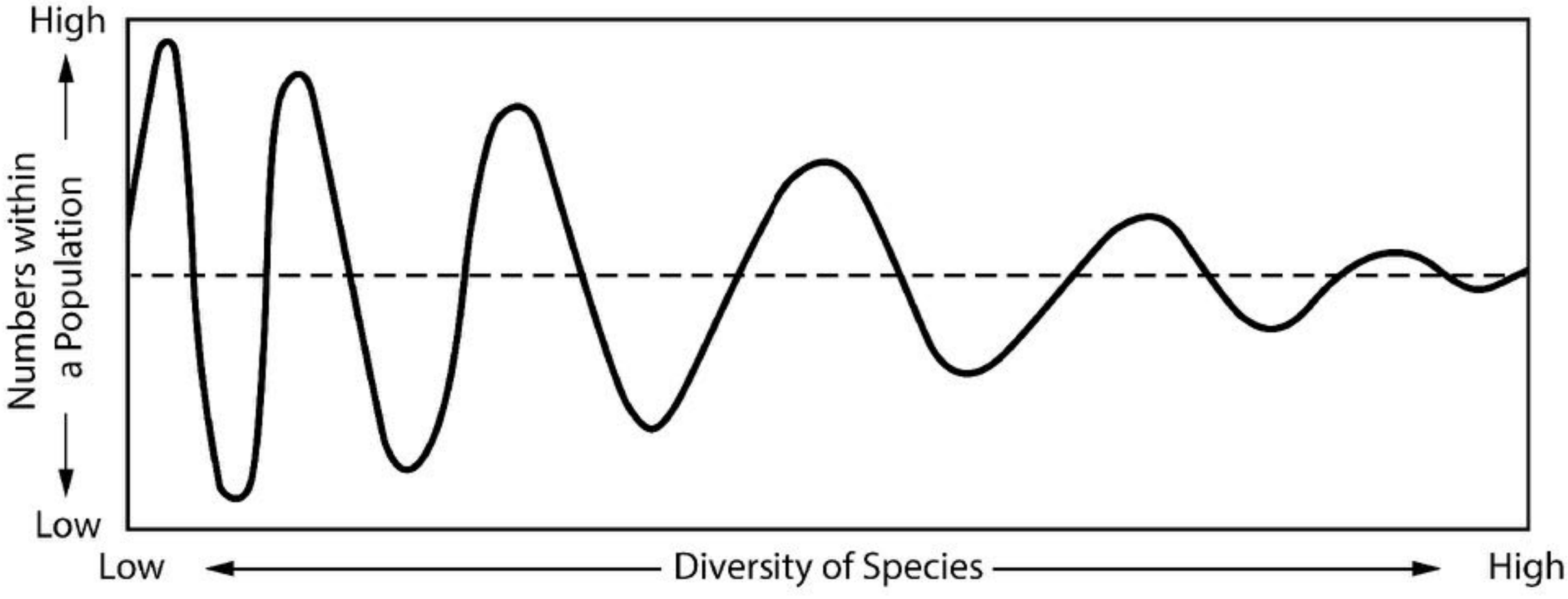
Increasing total energy flow



in the whole energy pyramide

April

Ecosystem dynamics



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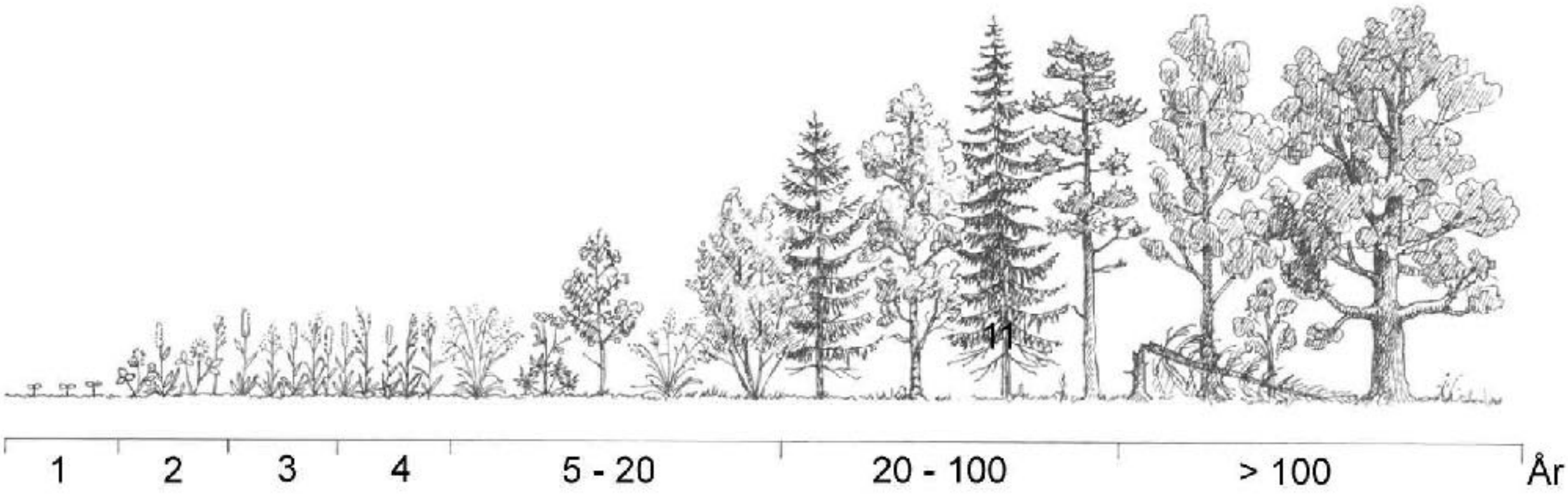
Succession



Soil Bacteria

Soil fungi

Regenerative Grazing

Management principles and factors

Degenerative grazing (overgrazing)

Time is always more important than **number** of animals

Sheep overgrazing in non-brittle land in northern England

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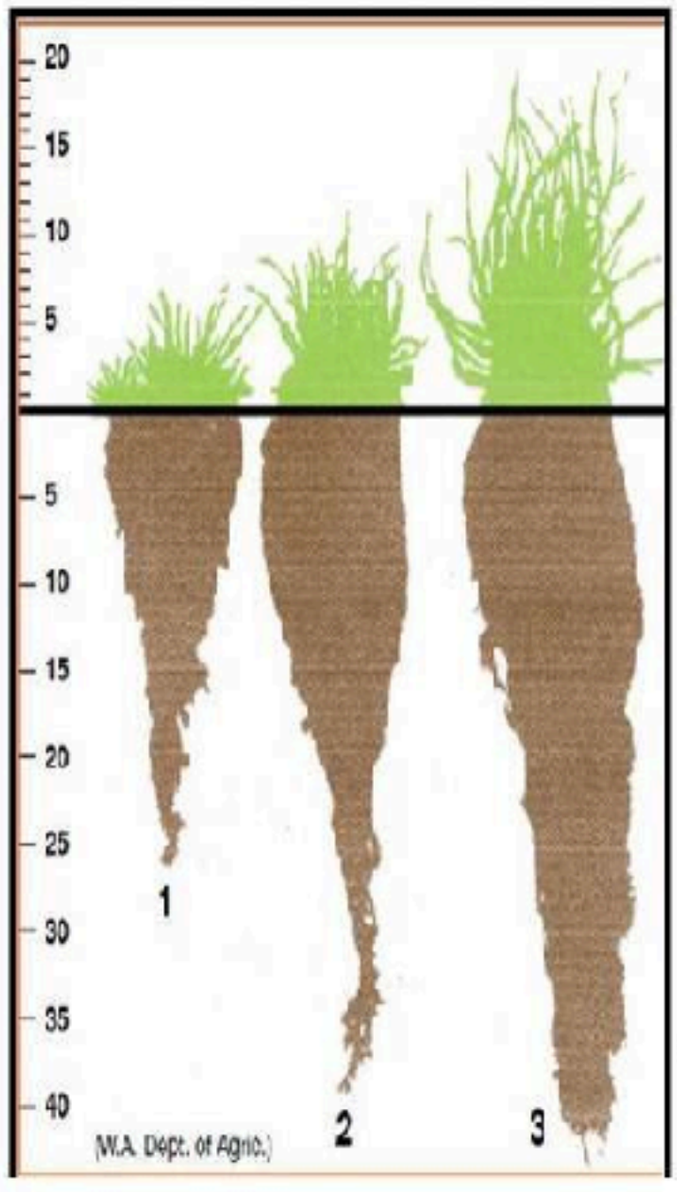
A function of time

Simulations of grazing frequency 's impact on perennial grass root growth

Fig. 4. Root growth of bunchgrass plants clipped at to target heights to simulate grazing (http://managingwholes.com/new-topsoil.htm).



(LH) Grazed 6 times at one leaf stage

(Middle) Grazed 3 times at two leaf stage

(RH) Grazed twice at three leaf stage

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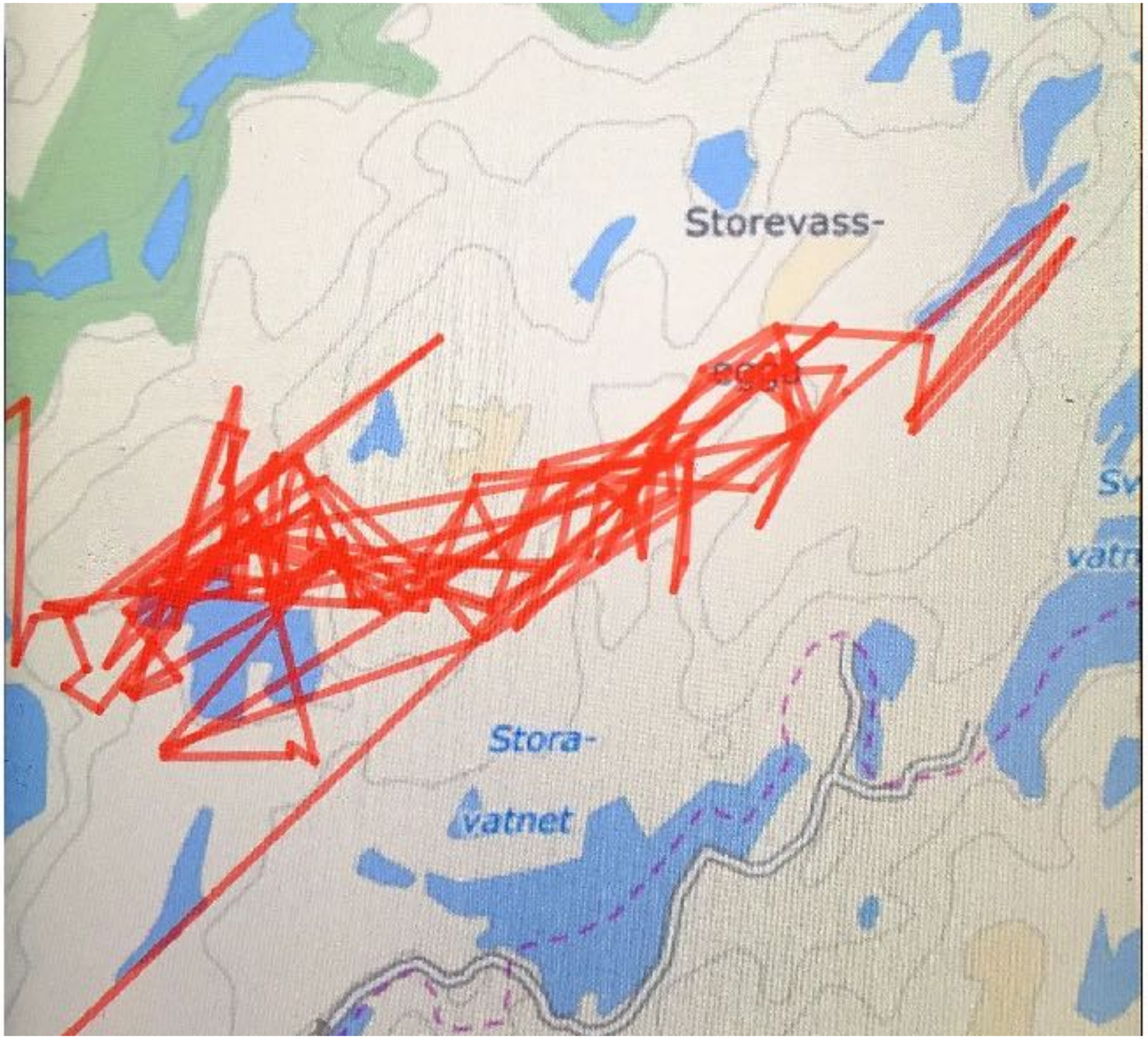
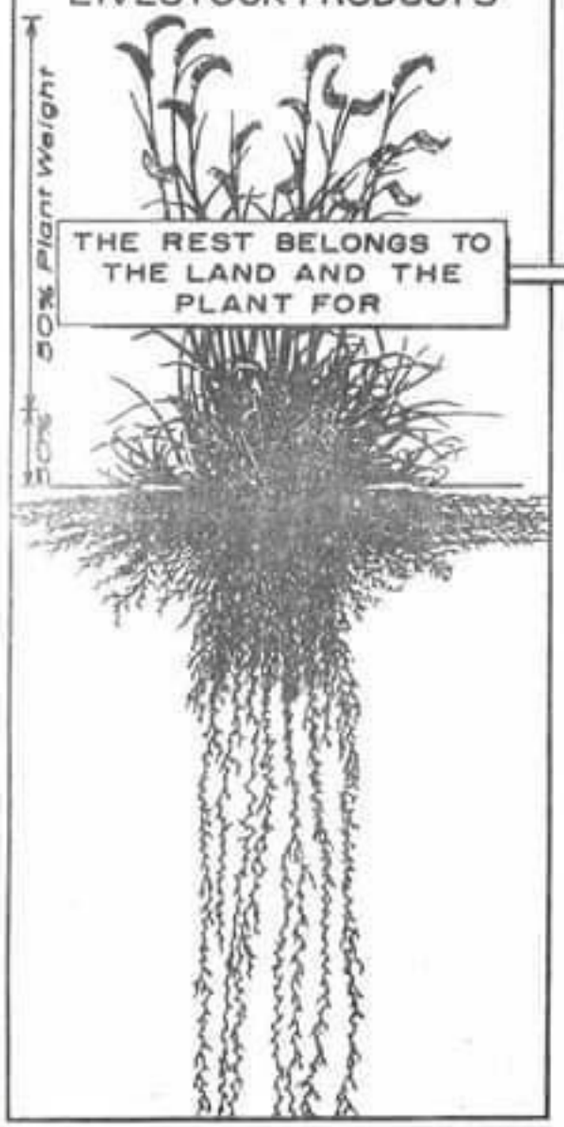


GPS track of one sheep continuous grazing

U. S. DEPARTMENT OF AGRICULTURE

NATURE GIVES US GRASS

ABOUT 50% OF THE TOTAL VOLUME OF GROWTH IS AVAILABLE FOR THE PRODUCTION OF LIVESTOCK AND LIVESTOCK PRODUCTS



THE REST BELONGS TO THE LAND AND THE PLANT FOR

WESTERN GULF REGION

SOIL AND GRASS INSURANCE

This insurance provides for—

EROSION CONTROL

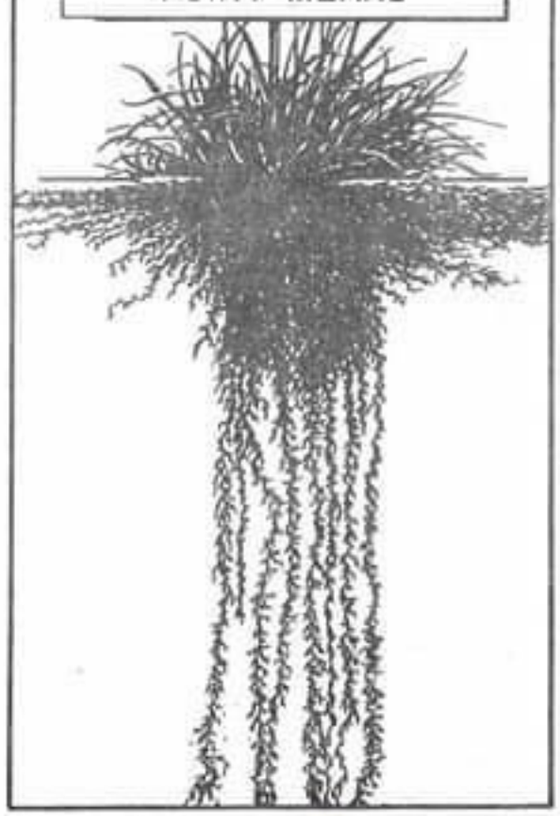
SOIL FERTILITY MAINTENANCE

WATER CONSERVATION

STABILIZED SOIL TEMPERATURES

PLANT DEVELOPMENT AND REPRODUCTION

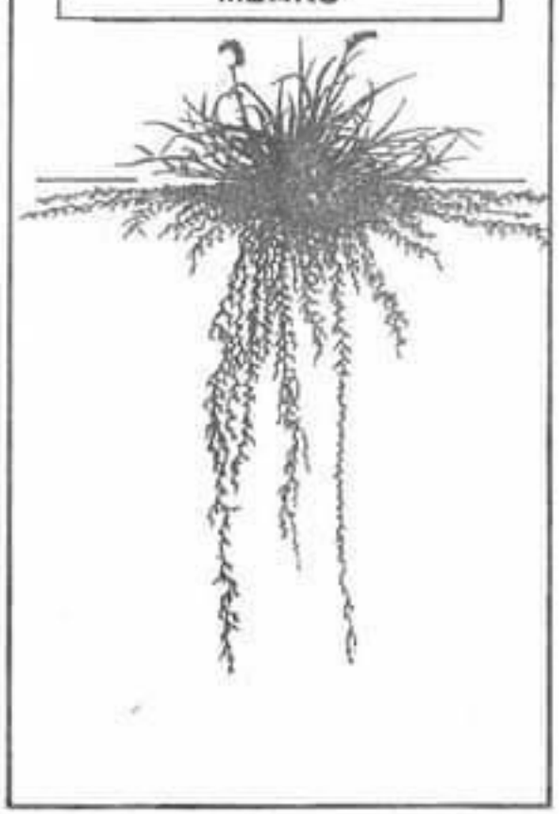
USE BEYOND THIS POINT MEANS



LOSS OF PLANT VIGOR

AND
LOSS OF FUTURE RANGE PRODUCTION

FURTHER USE MEANS



SOIL CONSERVATION SERVICE

BARE GROUND RANCHING

FORAGE PRODUCTION IS CUT

GRASS RECOVERY IS VERY SLOW

NATURE CANNOT GIVE UP HER FERTILITY, RECEIVE NOTHING IN RETURN, AND STILL PRODUCE GRASS

Available Sizes
8"X 10½" – 20"X24"

Designed by
Robert A. Spencer
L.A.K. 10-23-47 4-L-5960

AGRICULTURE-SCS-FT WORTH, TEX. 3/25/50

For In-Service Use Only

Mimicing natural behaviour

Time, duration and recovery

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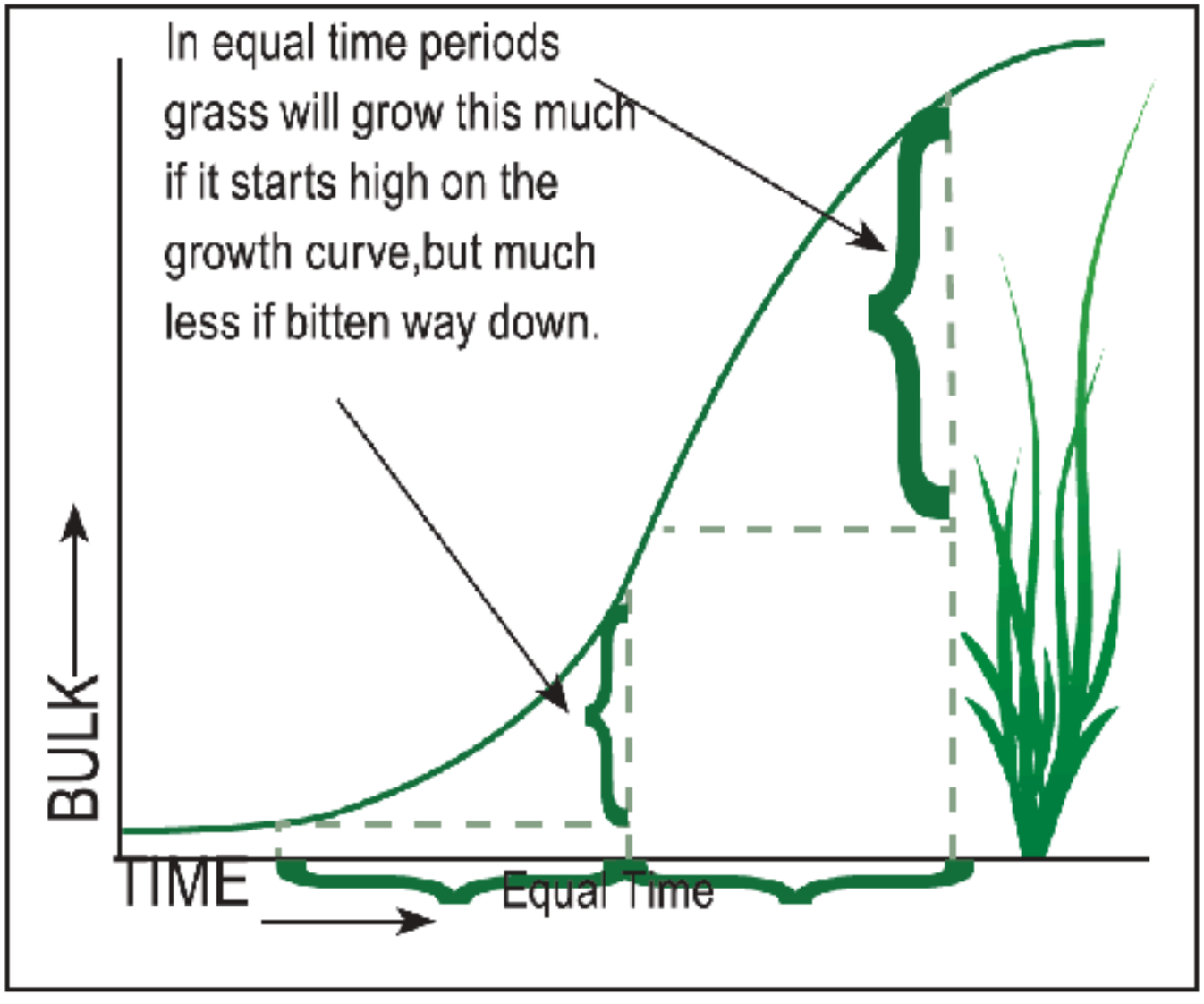

Figure 6. Severely grazed plants recover much more slowly than moderately grazed ones.

Optimal grazing TIME

for healthy soil, grass and animal

Grazing time : Recovery time

3 days - 30 days

! General recommondation !

Depending on growth conditions and state of plant and soils

Optimal grazing PRESSURE

for healthy soil, grass and animal

60%

Grazing

30%

Trample

10%

Leave standing


26 Juli -15


14 aug -15


30 aug -15


20. Sept -15

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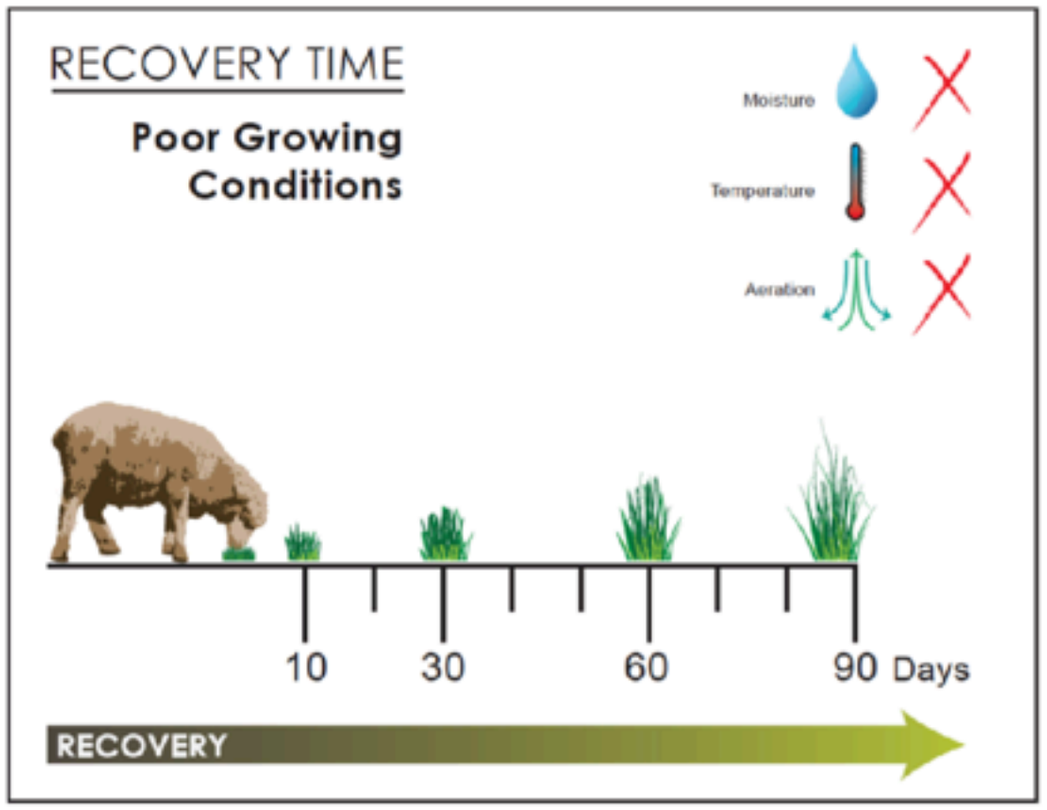
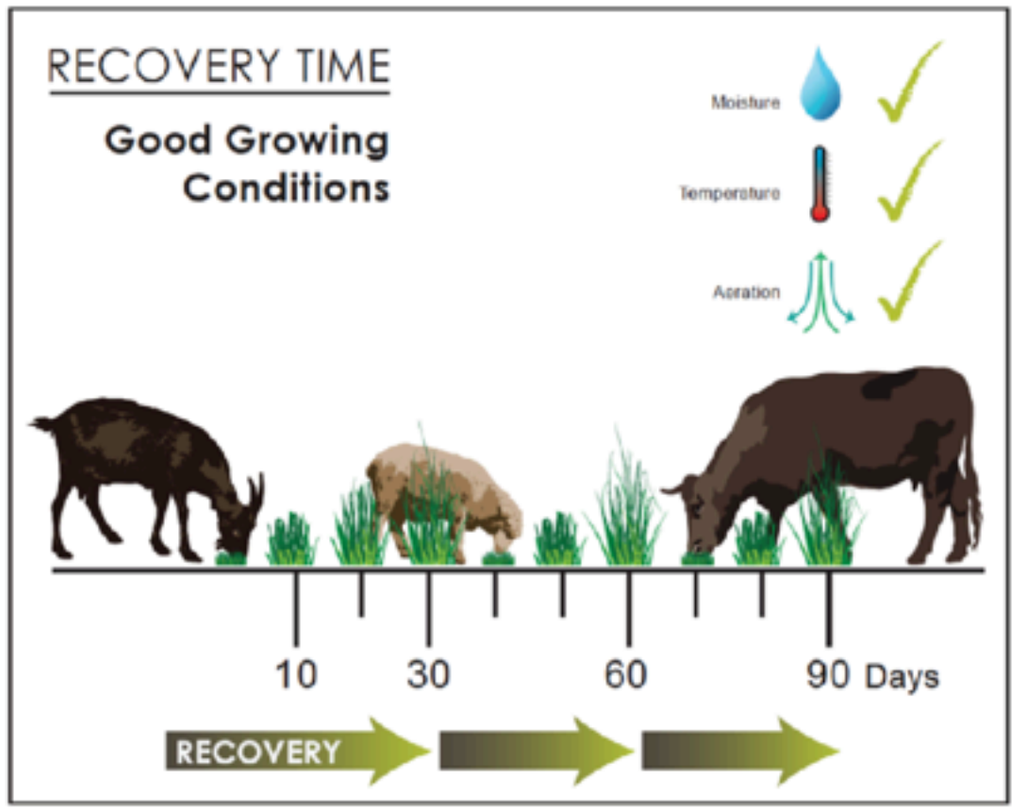


During poor growth conditions in brittle environments perennial bunch grasses may need 90 days or more to recover after being severely bitten.



When proper moisture, temperature, and aeration combine, perennial bunch grasses may grow fast and need less recovery time. Animals may bite them off after as little as 30 days.

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Subdividing pastures

to control time, duration and recovery

Estimate area for 1 animal day

Measuring Unit = Animal Days/Hectar

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Grazing Planning

Getting the animals to the right place, at the right time, for the right reason

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winter grazing

Bale grazing

FHM™

Framework for Holistic Management

At decision level

Handeling complexity
Defining intention and outcome
Integrated financial, social,
and ecosystem planning procedures

EOV™

Environmental Outcome Verification

At result level

Measure development
of ecosystem health
Eco-region specific
Farmer led field yearly monitoring
Verification every five year

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Thank you for your time