

The logo for the Sustainable Farming Association of MN is centered in the background. It features a circular emblem with a teal border containing three white arrows forming a clockwise cycle. Inside the circle, the letters 'sfa' are written in a white, lowercase, sans-serif font. Below the circle are two stylized leaves: a green one on the left and a brown one on the right, both with white veins. The text 'Sustainable Farming Association of MN' is written in a light grey, sans-serif font, curving around the bottom of the emblem.

Conservation Grazing

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Why?

Reduce overgrazing

Reduce erosion

Restore native plant communities/habitat

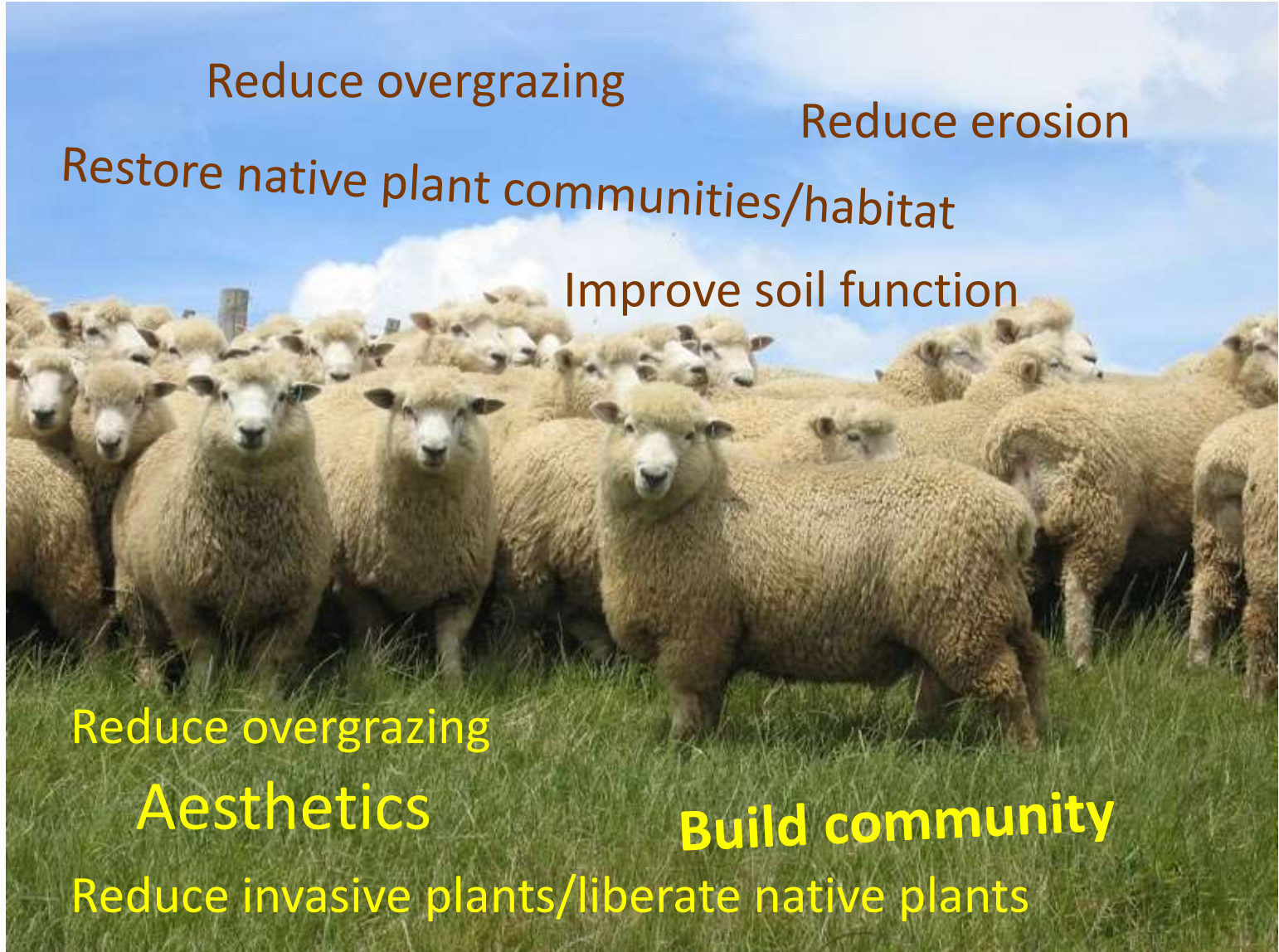
Improve soil function

Reduce overgrazing

Aesthetics

Build community

Reduce invasive plants/liberate native plants



Impact of grazing

- Grassland health is maintained by ***occasional*** short-term disturbance (grazing) followed with ***adequate*** rest.
- Grazing is ***trauma*** to the plant.
- Forage plants can handle ***moderate*** “injury” **IF** given an opportunity to recover.
- Adequate rest = **key** to land restoration.

Native herbivores



Est. 60 Million



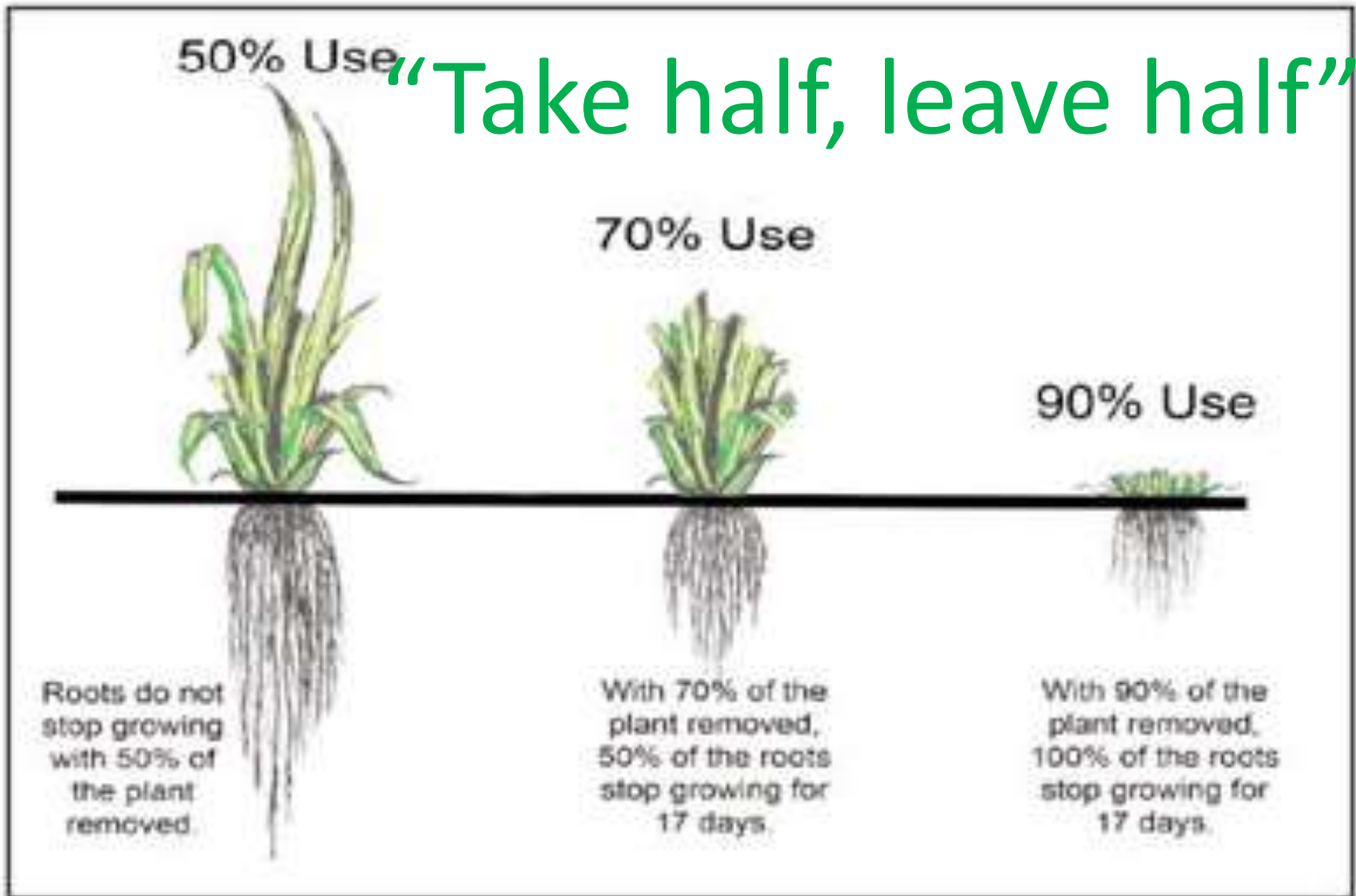
Est. 120 Million

Historic herbivore movements

- Indigenous habitat manipulation
- Hunting pressure
- Seasons
- Weather (drought, wildfires, floods)
- Forage plant recovery
- Predators



Impact of Grazing on Roots



Courtesy: On Pasture

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“Graze the best. Trample the rest.”

Protein and digestible carbohydrates (Cellulose, hemi-cellulose, pectin)

Non-digestible carbohydrates = Lignin

Grazing Management

- We control:
 - Timing = time of year
 - Frequency = Rest period length
 - Duration = Time on a specific site
 - Intensity = Stocking density (#'s/acre)

What are your goals?

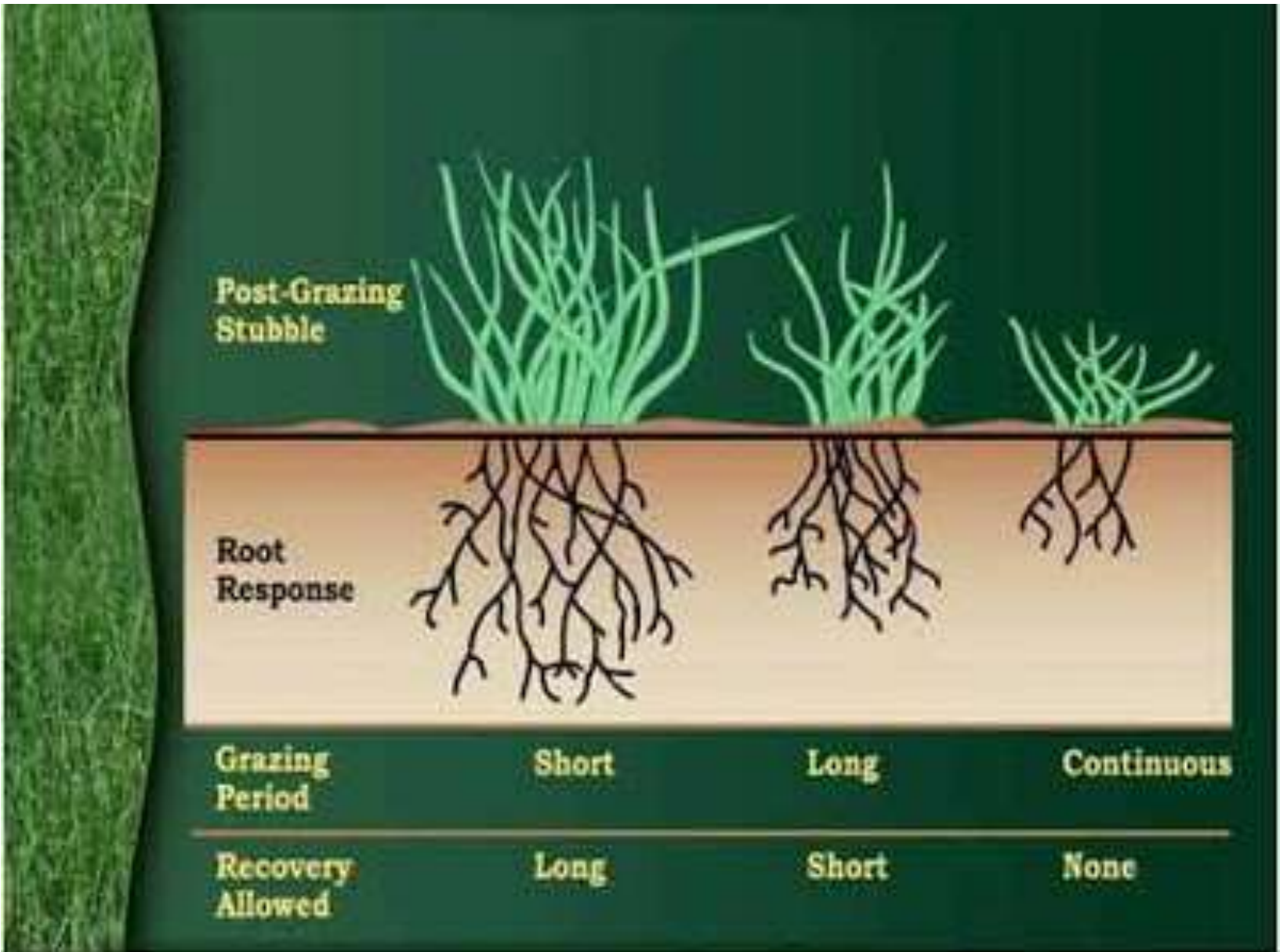
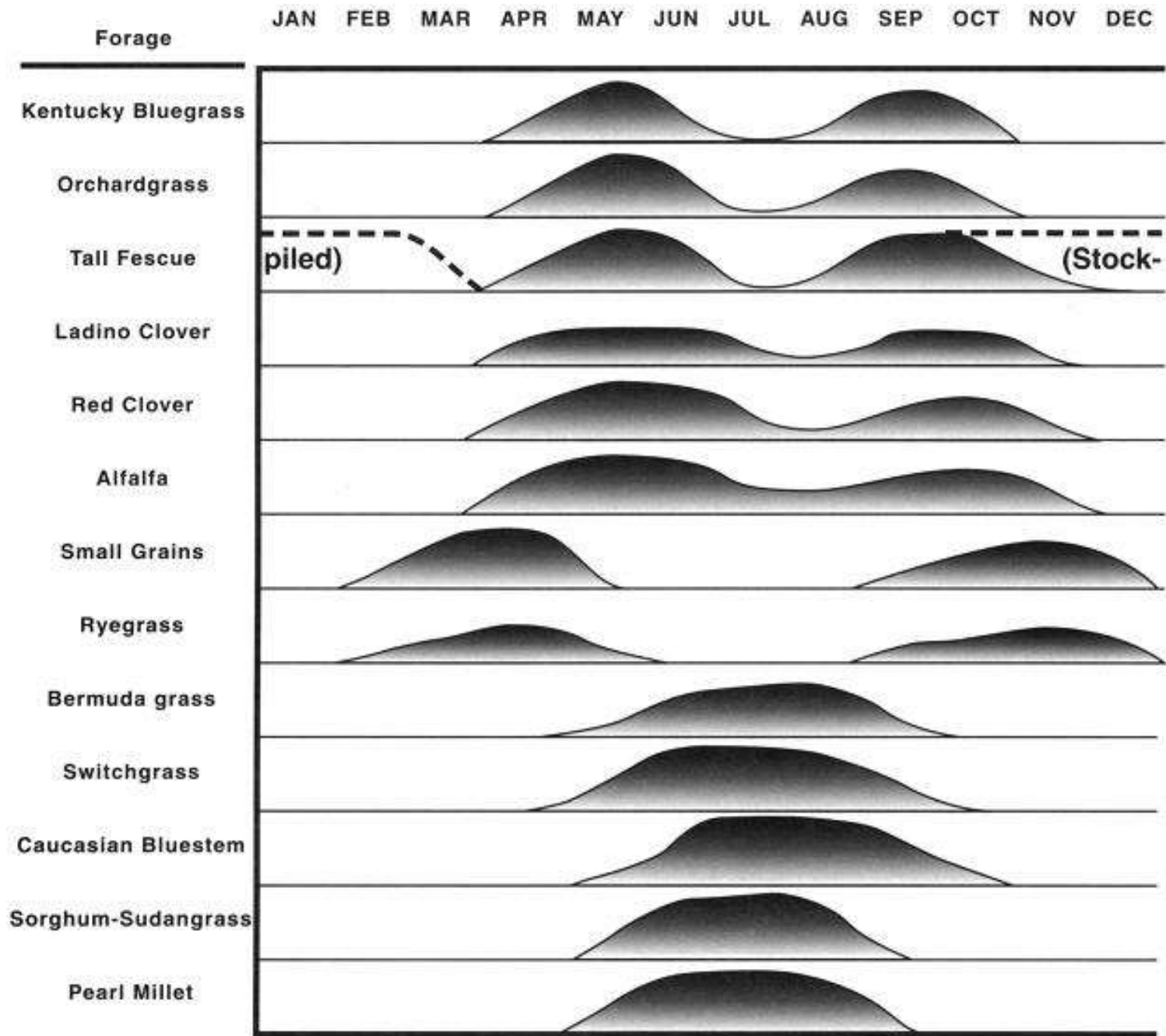


Image: Kansas State University

Rest duration depends upon:

- Weather
- Intensity of grazing event
- Health and size of plant root system
- Time of year
- Plant composition in pasture
- ***Avoid determining rest periods based on the calendar or a set schedule - focus on plant recovery.***



Courtesy: OnPasture Copyright Sustainable Farming Association - sfa-mn.org

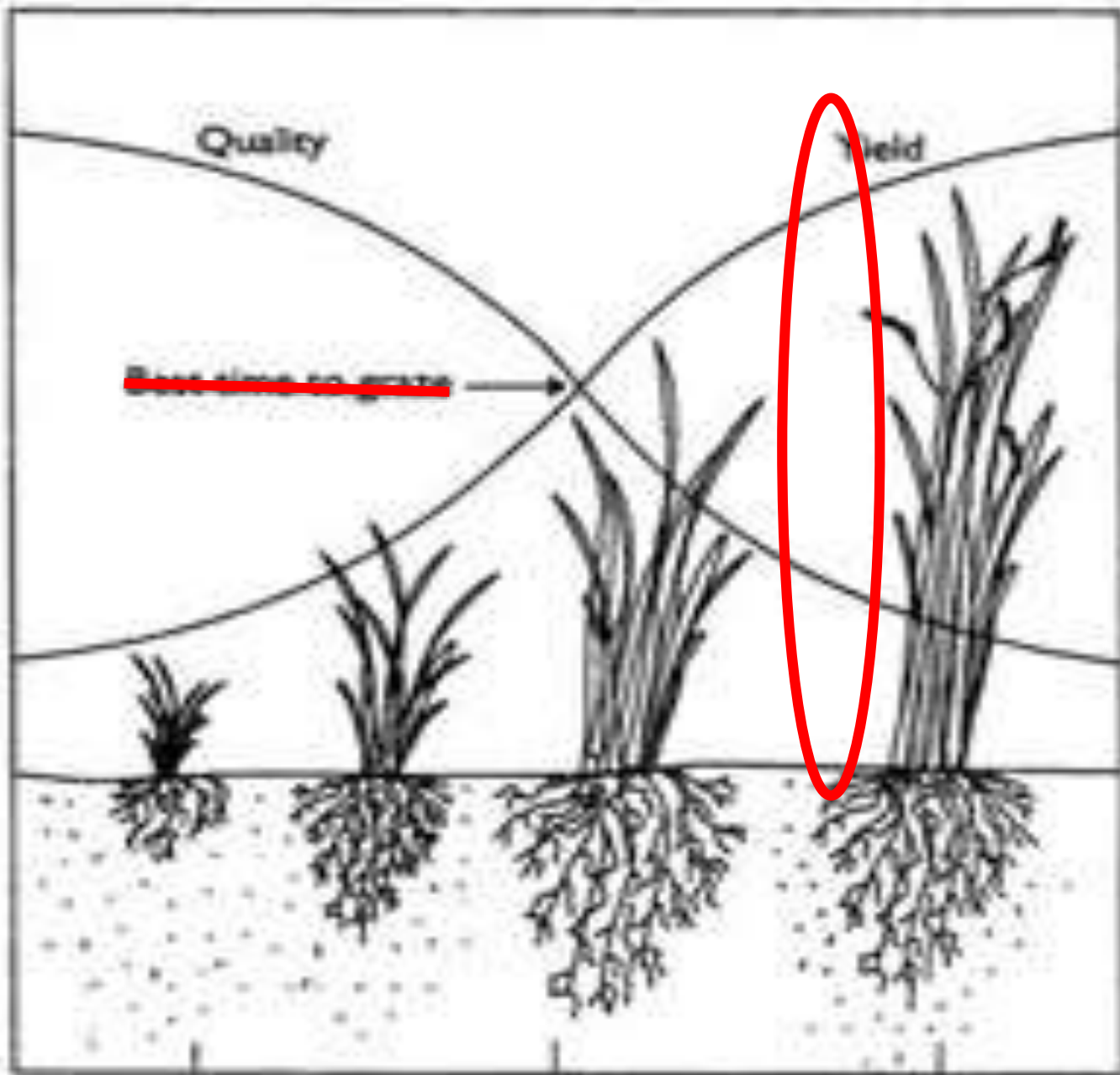
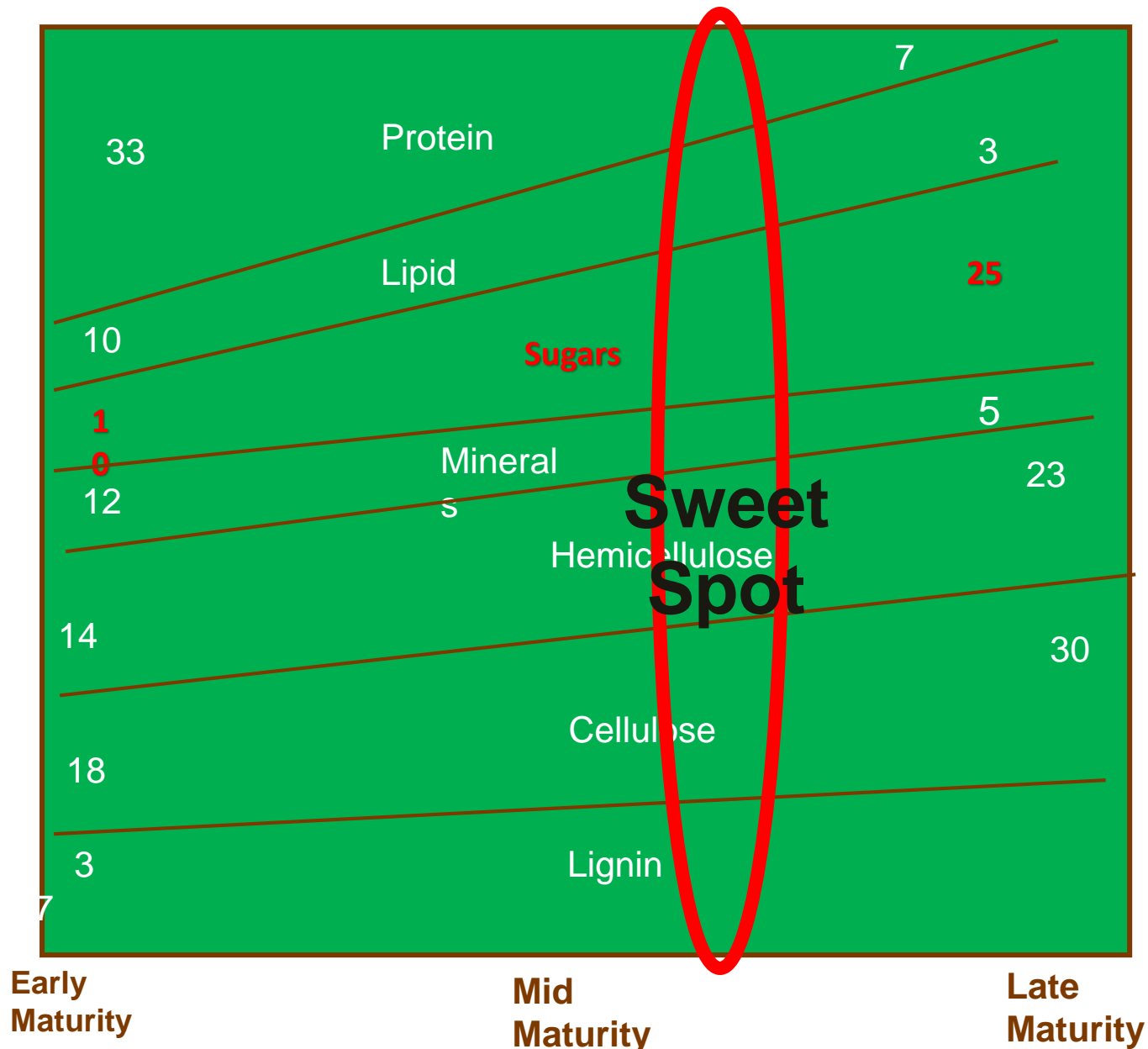


Image: University of Minnesota Extension

Effects of Stage of Maturity on Pasture Composition



Optimal graze window



When has the sward recovered? (Or, when should I graze?)



When has the grass recovered?



Copyright

Manure consistency = forage
quality



Graze the best. Trample the rest.

Digestible carbohydrates:
Cellulose, hemi-cellulose,
pectin, and protein

Non-digestible
carbohydrates = Lignin

Trampling = Feeding the soil “livestock” (soil microbes).



Traditional continuous graze pasture stocking densities:

- 1 cow/calf pair per 3-4 acres
- 1200 # cow
+400 # calf
1600#’s

1600 #’s/3 acres = 533 #’s/acre stocking
density

We need >40,000 #’s/acre to see a substantial
positive impact.

Adaptive or Flex Grazing

- Allows practitioner to address multiple goals and objectives.
- Not a routine or rigid system
- Adapt to changing conditions

What Does It Look Like?



The higher the density, the greater the positive impact.

- Better manure distribution
- Better forage utilization
- Increase in soil organic matter.
- Increase in water holding capacity.
- Increase in soil micro populations.
- Increase in plant diversity.
- Increase in forage quality.
- Increase in forage production.
- Increase in herd performance.
- Decrease producer input costs.

Are soil microbes important?

**85 – 90% of soil
function is
mediated by soil
microbial activity.**

What is soil function?

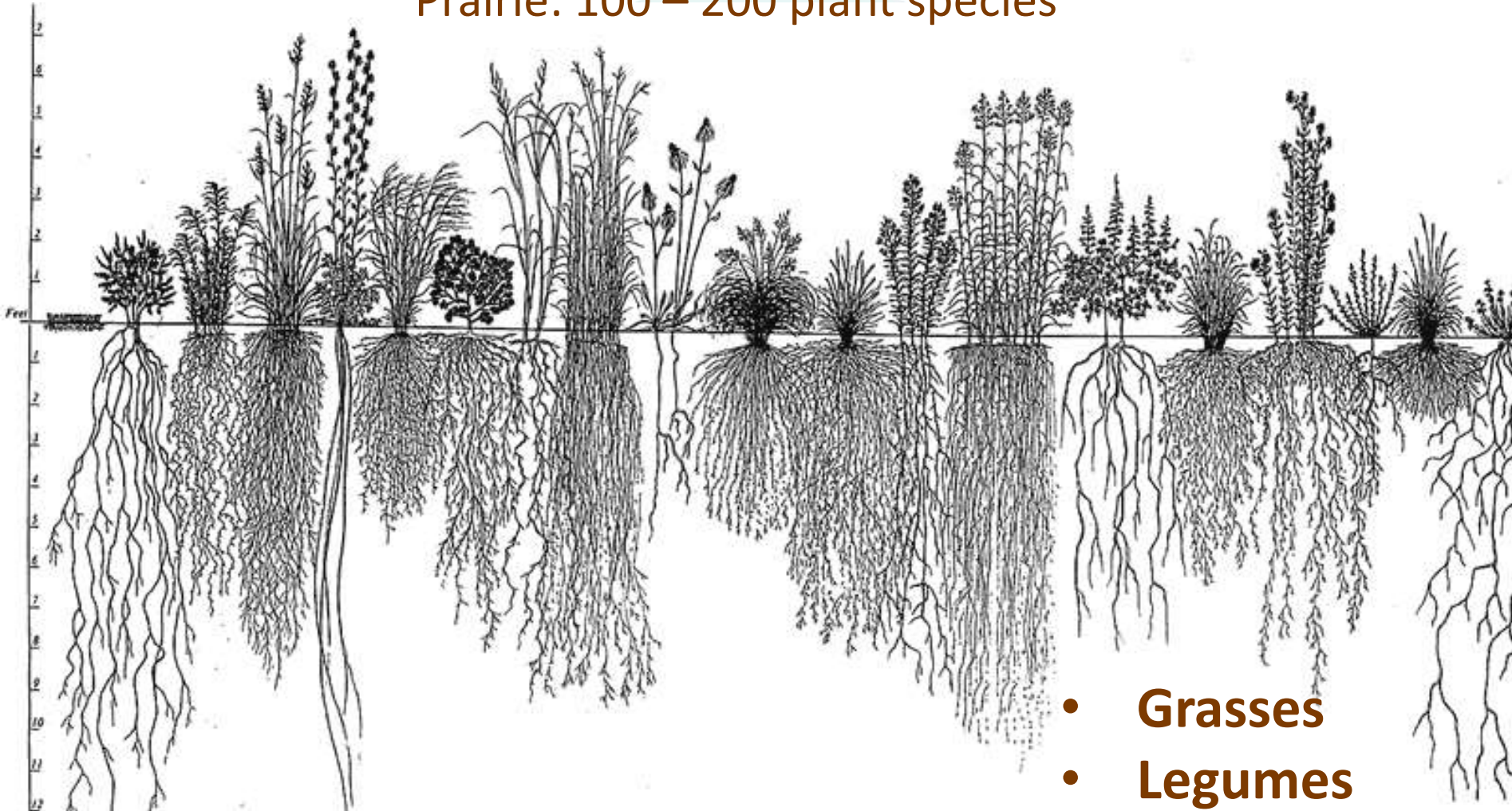
- Ability of the soil to capture and store water
- And ability of the soil to cycle nutrients (**C**, **N**, **P**, **K**, **S**)
- Soil function = Soil health
- Managed grazing perennial plants fastest/
most powerful means to restore soil
function/soil food web/nutrient and water
cycles.

How can we promote soil microbes?

- Keep the soil covered
- Minimize soil disturbance
- Keep a living root in the soil
- Increase plant diversity
- Manage livestock impact
- Work within **context** of the field/farm

Plant diversity = root diversity

Prairie: 100 – 200 plant species



- **Grasses**
- **Legumes**
- **Forbs**

Living roots = microbial activity



How are we doing?



Other predators



Also watch earthworm and bird populations!

Dung beetle activity



Modern Fence Technology



NETWORK

Simple Watering Systems



Tire tanks



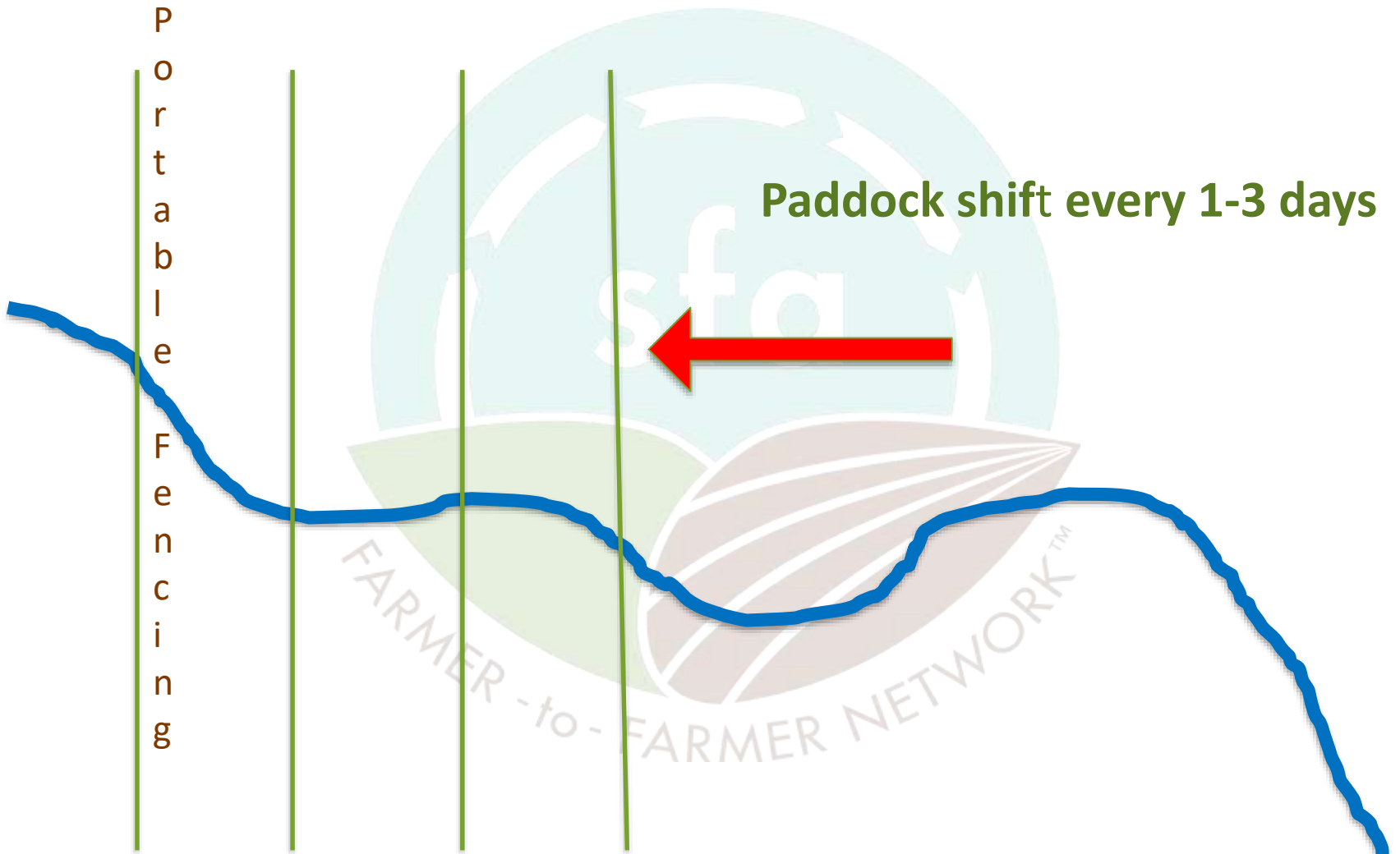
Using surface water



Surface Water Managed Access



Streams



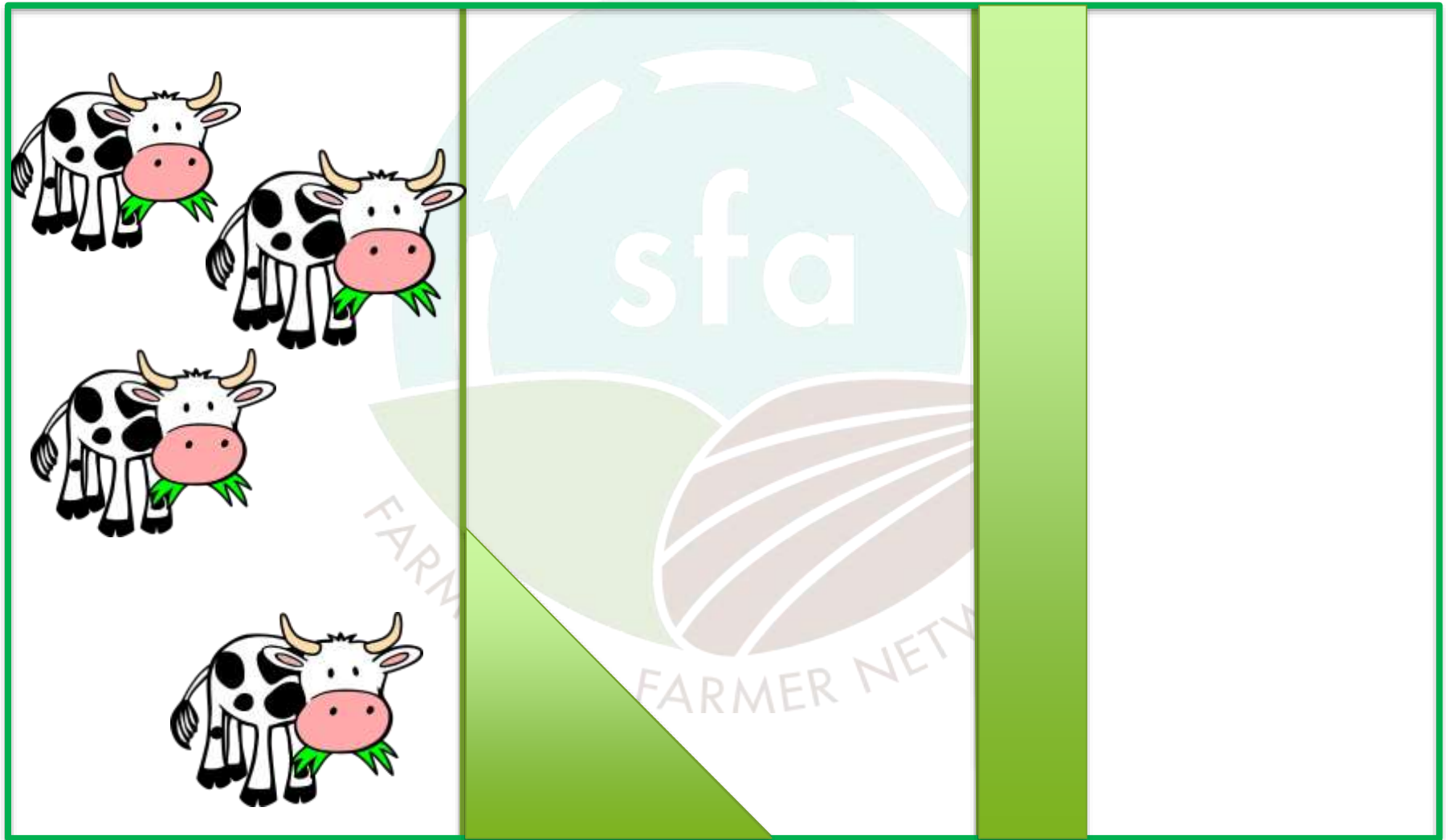
Facilitating “herd effect”

- Herd effect = short term high density congregation of livestock on a planned location to facilitate vegetation management.
- Examples:
 - Mineral feeder in thistle patch at blossom
 - Quality hay bale placed in willow patch
 - Unrolling bales on gravelly knoll

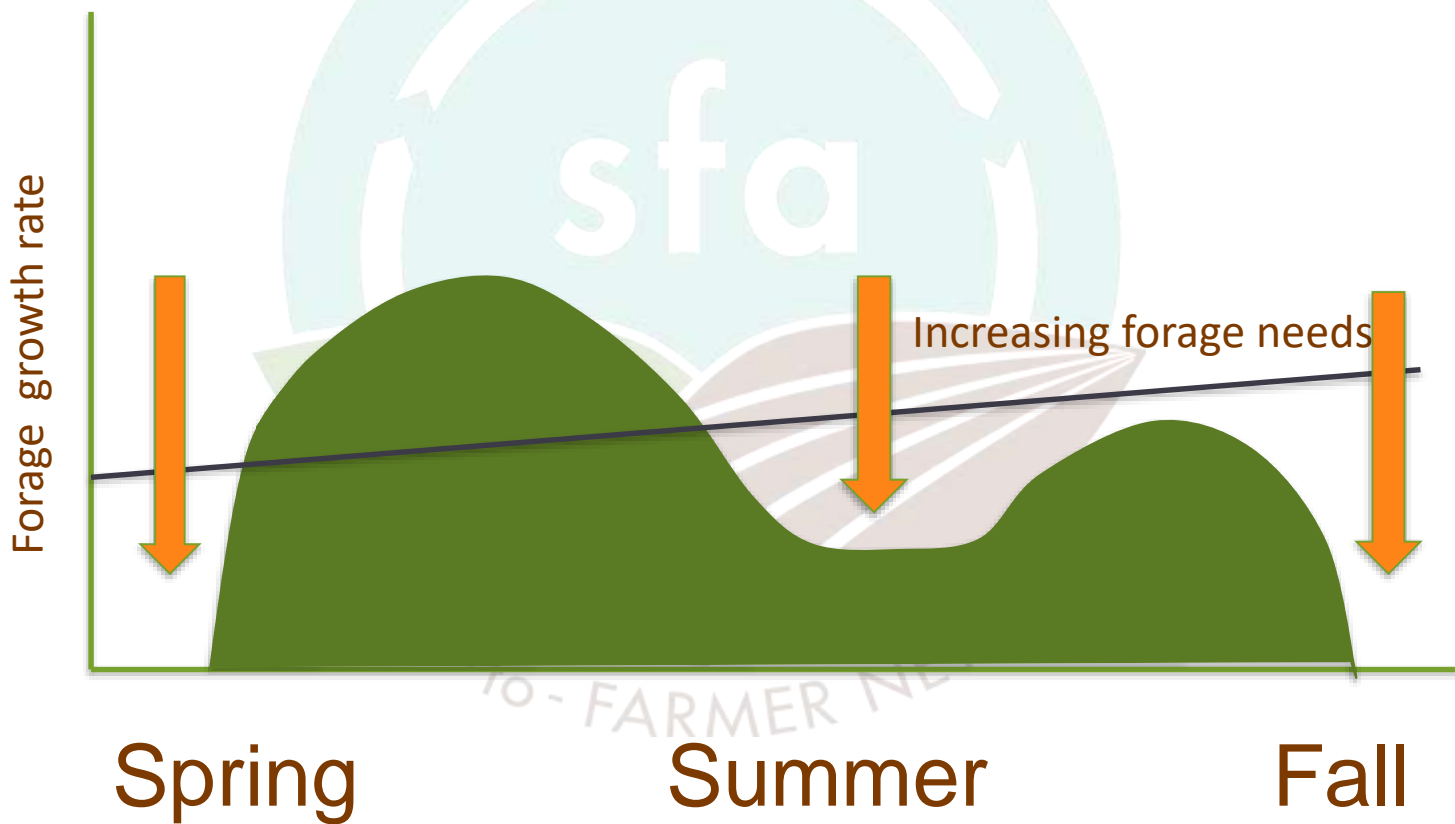
Pasture infrastructure



Herd effect for increased density



Filling in the gaps.



Strategies For “Summer Slump”

- Feed stored forages (Hay)
 - Systematically feed on site to promote fertility.
 - Part-time hay feeding
 - On a paddock during day, hay at night – to slow rotation down.



Strategies For “Summer Slump”

- Harvest spring surplus as hay/haylage.
 - Harvest 40-60% of hayable pasture acreage in June.
 - Can typically graze again in 40-60 days with adequate rain (early August).
 - Rotate from year to year which paddocks are cut for hay/haylage.



Estimating Paddock Size

1. Estimate herd D.M. needs.
2. Estimate paddock forage amount



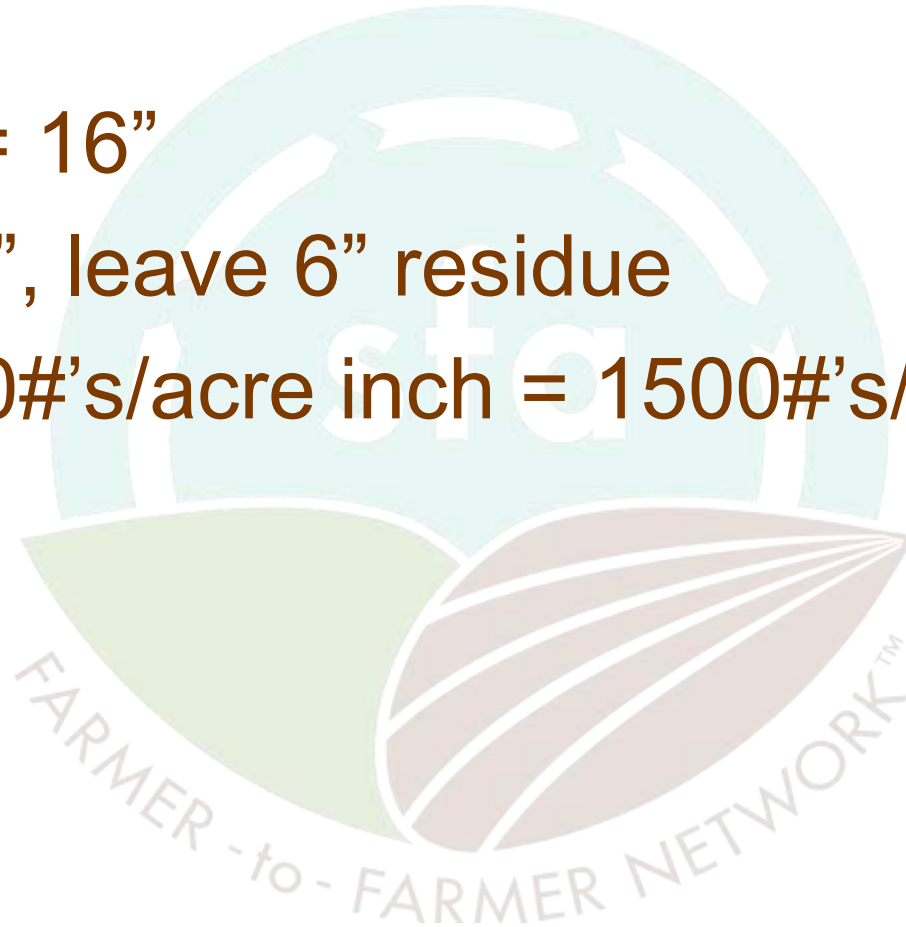
Herd D.M. Needs:

- 10 cows x 1300#’s = 13,000#’s
 - 10 calves x 350#’s = 3,500#’s
- 16,500#’s

$$16,500 \times 3\% \text{ B.W.} = 495\#’\text{s/day}$$

Available Forage:

- Height = 16"
- Take 10", leave 6" residue
- $10 \times 150\#'\text{s}/\text{acre inch} = 1500\#'\text{s}/\text{acre}$



Paddock Size:

Available forage (1500#'s/acre)

Herd D.M. needs (500#'s/day)

= 1/3 acre

43,560 ft. sq. x 0.33 = 14,374.8 ft. sq.

= (approx.) 120' x 120', or 80' x 180'

Adaptive Management

- Alternate stock densities.
- Do NOT move through rotation in the same pattern.
- Alternate height when plants are grazed
- Alternate length of rest period
- Alternate time of year grazed
 - Begin in different paddock every year.

Thank you!



Seeded annuals (“cover crops”)



Hay or pasture renovation

