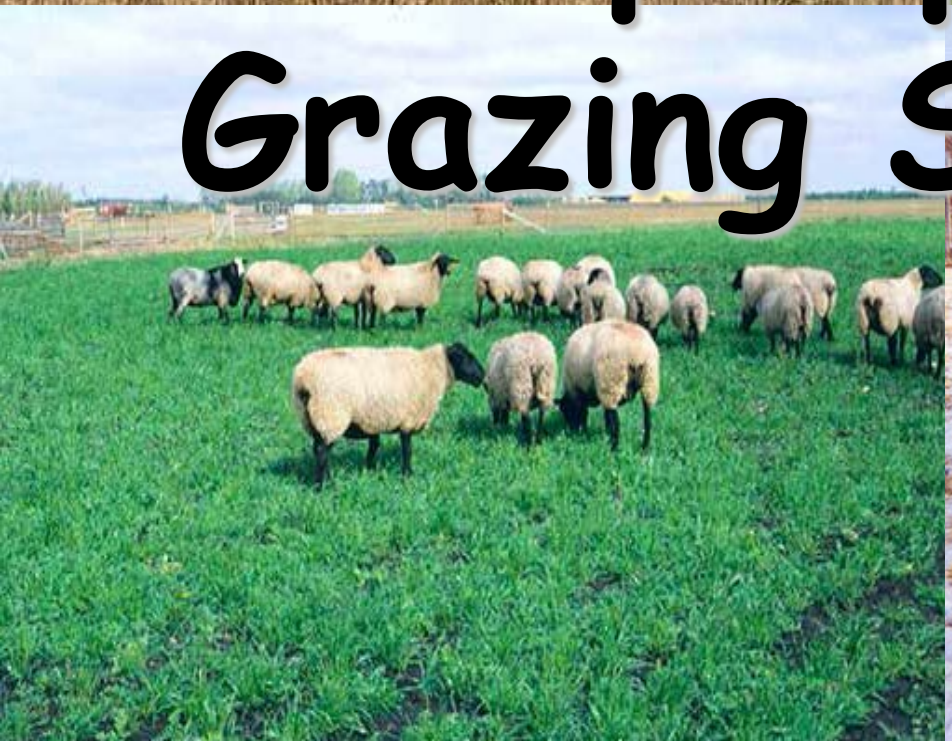
Rotational Grazing for Sheep and Goats

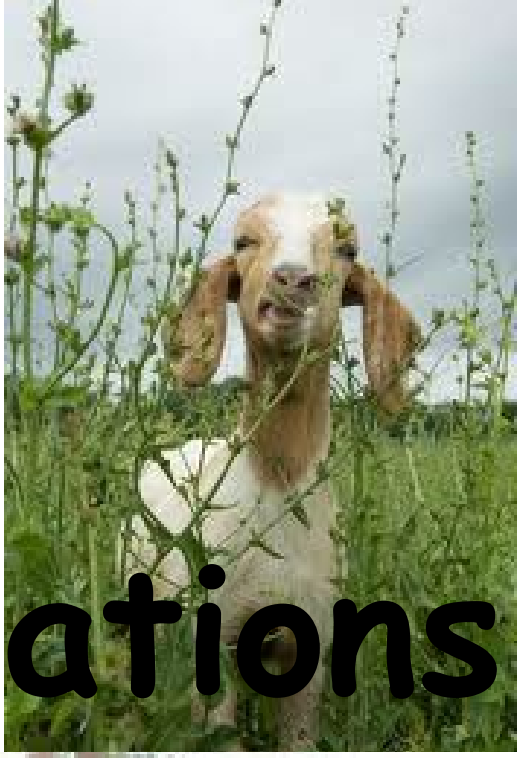
Forage Management Soil Health

Grant Lastiwka, P. Ag.
Forage/Grazing Specialist, Grazier
Innisfail, Alberta

Sheep Operations

Grazing Systems?

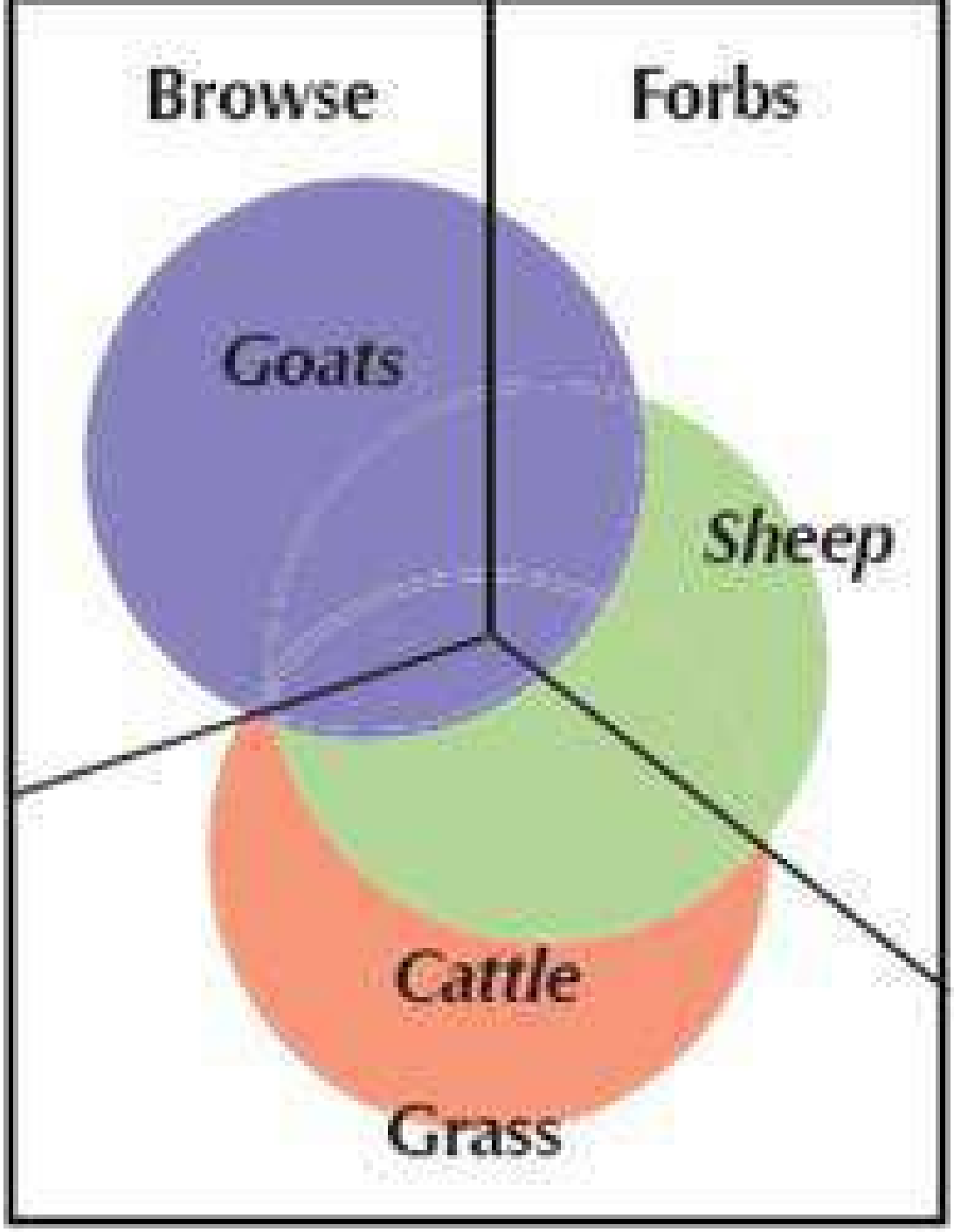




Goat Operations Grazing Systems?

Grazing System

- Forage/Soil
- Water
- Fencing
- Sheep/Goats
- YOU


Browse
Forbs
Goats
Sheep
Cattle
Grass

Forage Production

- Management 40%
- Environment 40%
- Species 20%

Gordon Hutton, Forage Specialist, Alberta Agriculture. 1996. Lastiwka Modified 2022.

Rotational Grazing
– a managed grazing method that uses alternating periods of grazing and resting for two or more paddocks.

Managed and Adaptive Grazing
– managing pastureland by controlling how much and how often each pasture is grazed. Managed grazing means forages and livestock are purposefully managed.

https://www.ablamb.ca/images/documents/management-modules/An-Introduction-to-Managed-Grazing-for-Sheep-and-Goat-Producers.pdf pg. 1. Author Kosinski. Reviewers Hosford, Lane June 2013.

Perennial Forages

- As much as 70% of perennial forage production occurs by mid-July/sooner
  - Heavily dependent on spring moisture
- Healthy Deep rooted plants handle stress and bounce back quicker
- Rain is never enough-Thatch shades the soil and helps increase water retention and infiltration
  - Take 1/3-2/3+ but key is to consider residual

Planned and Managed Growing Season = Longer Grazing Season = Increased Plant/Soil Health

Well Managed Grazing

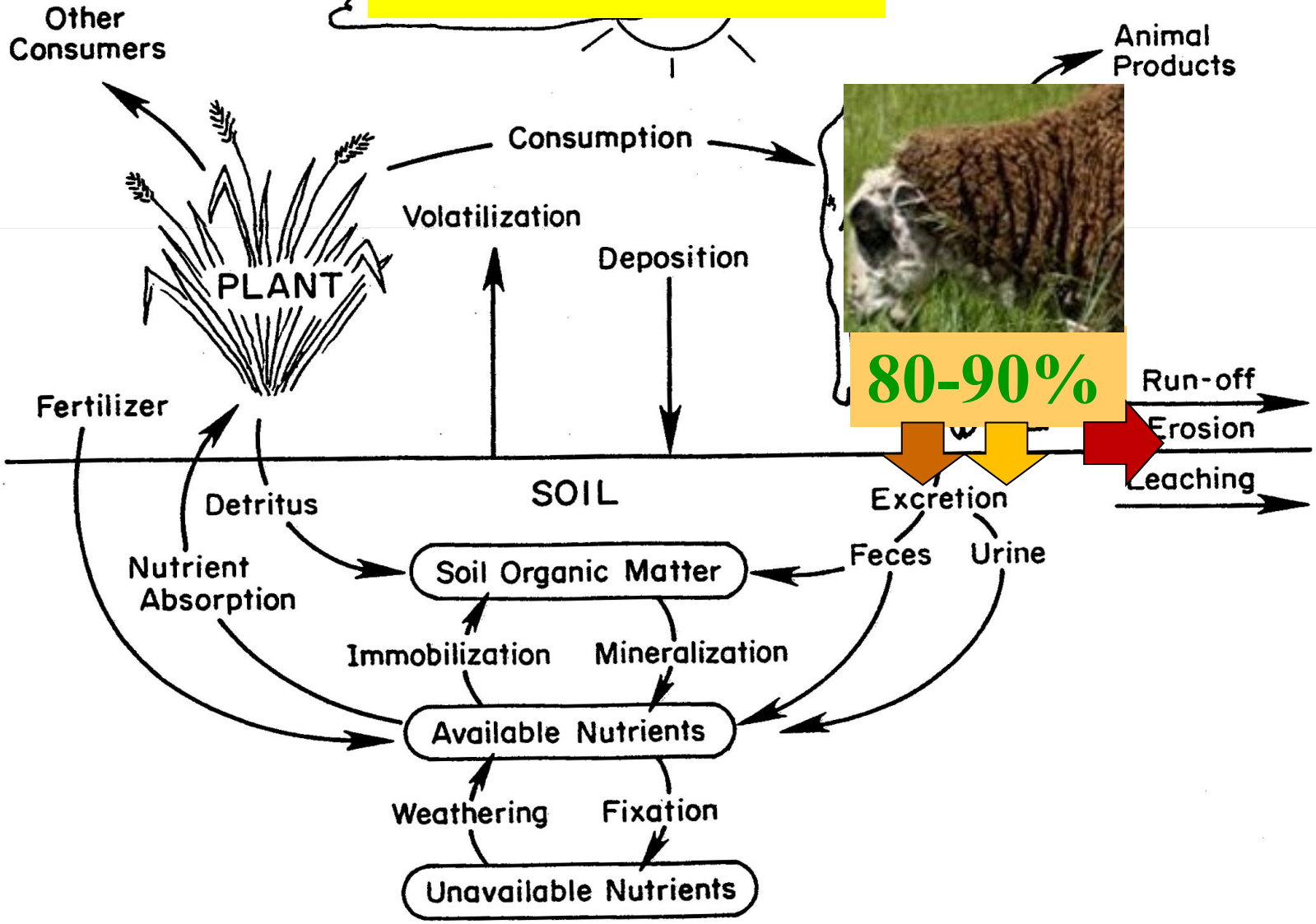
- A planned approach to grazing that manages the parts (sheep/goats, plants, soils, economics and you) as a dynamic system

Source: Gerrish, modified Lastiwka

Overgrazing is:

- Grazing plants that have not had time to recover from the last grazing
  - –Coming back too soon/spring too early
  - –Leaving animals on a paddock to regraze fresh regrowth
  - -Opening gates or leaving sheep/goats in the fall to eat off residual in paddocks

"You are a Light Farmer" Christine Jones



Use Rotational Grazing

This managed grazing system helps you manage plant growth in your paddocks. By moving your flock or herd between many paddocks, you will be able to keep your sheep or goats grazing younger grasses and legumes with higher quality.

Research has shown that increasing paddock rotation from twice a month to twice a week increased the number of grazing days by 40% (Simon, K. 2011).

https://www.ablamb.ca/images/documents/management-modules/An-Introduction-to-Managed-Grazing-for-Sheep-and-Goat-Producers.pdf
p. 13.
Author: Stephanie Kosinski for ALP. Reviewers Sue Hosford, Woody Lane.

An Introduction to
Managed Grazing
for Sheep and Goat Producers

Alberta Lamb Producers

ALMA
Alberta Livestock and Meat Agency Ltd.

Government of Alberta

https://www.ablamb.ca/images/documents/management-modules/An-Introduction-to-Managed-Grazing-for-Sheep-and-Goat-Producers.pdf

Author:
Stephanie Kosinski
for ALP.
Reviewers Sue Hosford, Woody Lane. 2013.

Grazing Plan Crucial

Forage supply Sheep/Goats

Inadequate rest reduces pasture productivity long term

Cathie Erichsen-Arychuk, Drought Team 2003.

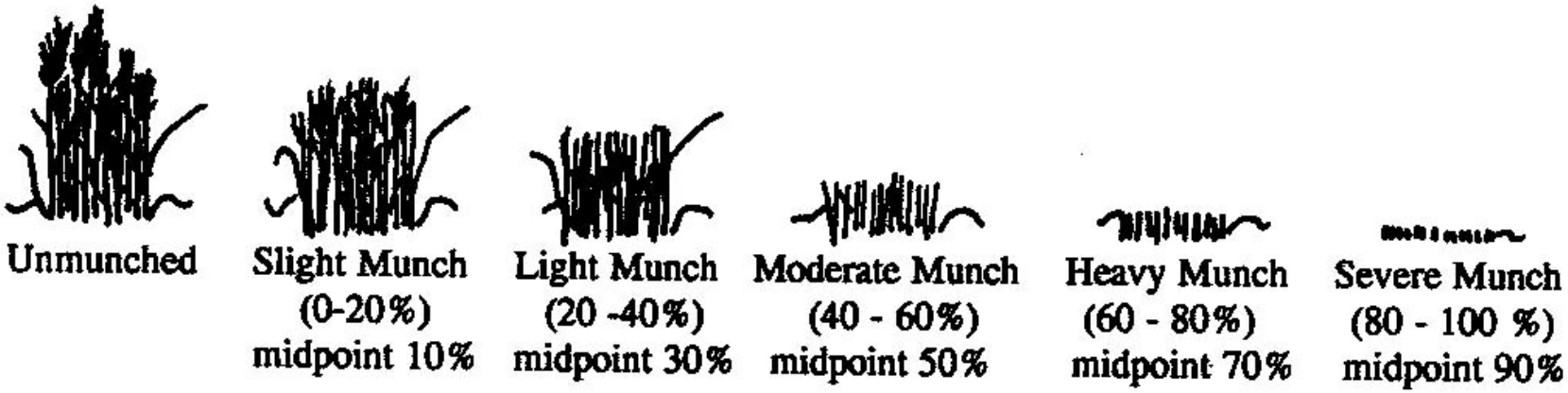

Tell us what you've done with all the grass!

Plant Rest ⟹ Vigor

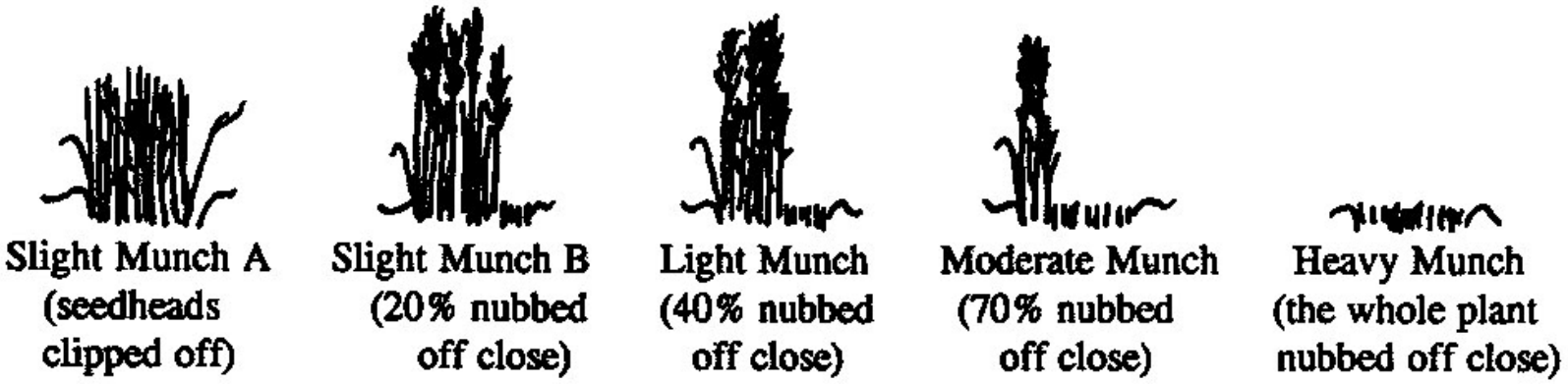
- Vigor for shoot and root
- 1-2 weeks earlier growth
- Better plant water use
- Keep high producing plants
- Longer growing season

Proceedings: Mging Cdn Rglds for Sustainability & Profitability, Vanin, 1994. Wildland Plants, SRM, p. 143-144, etc..

Light and Severely Grazed

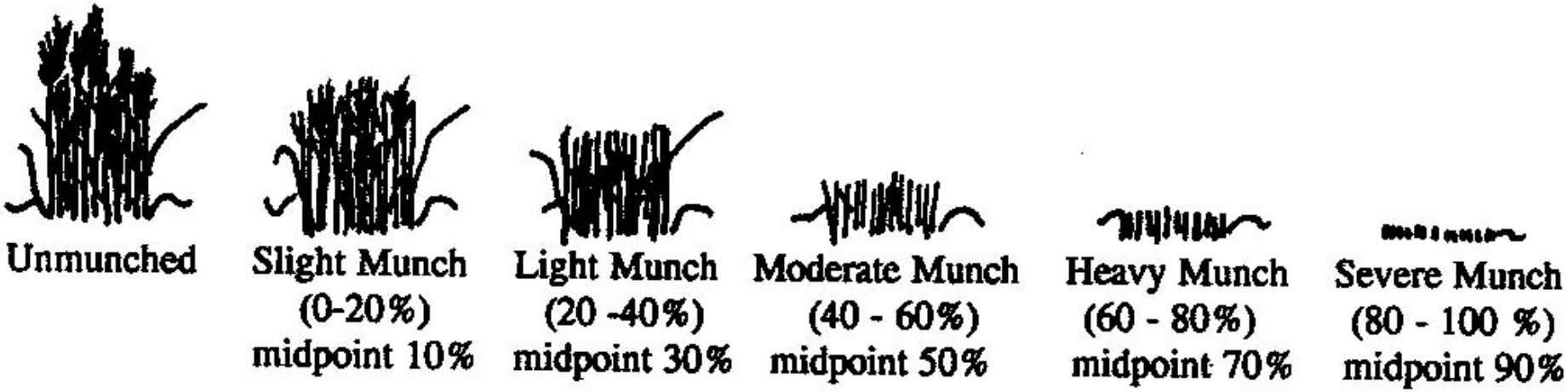


Reality



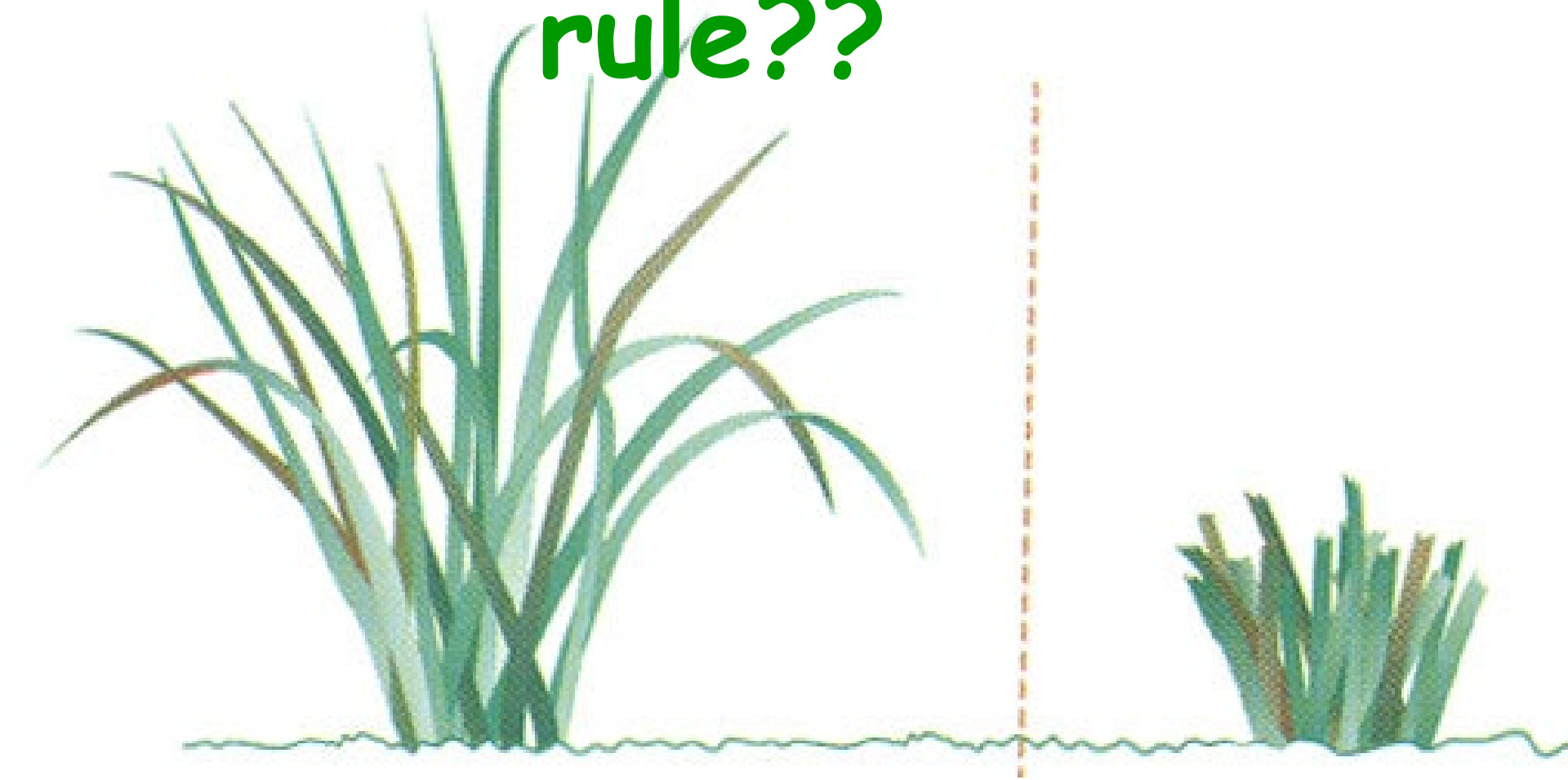
Source: McKinney, 1998

Equal in Opposite Measure

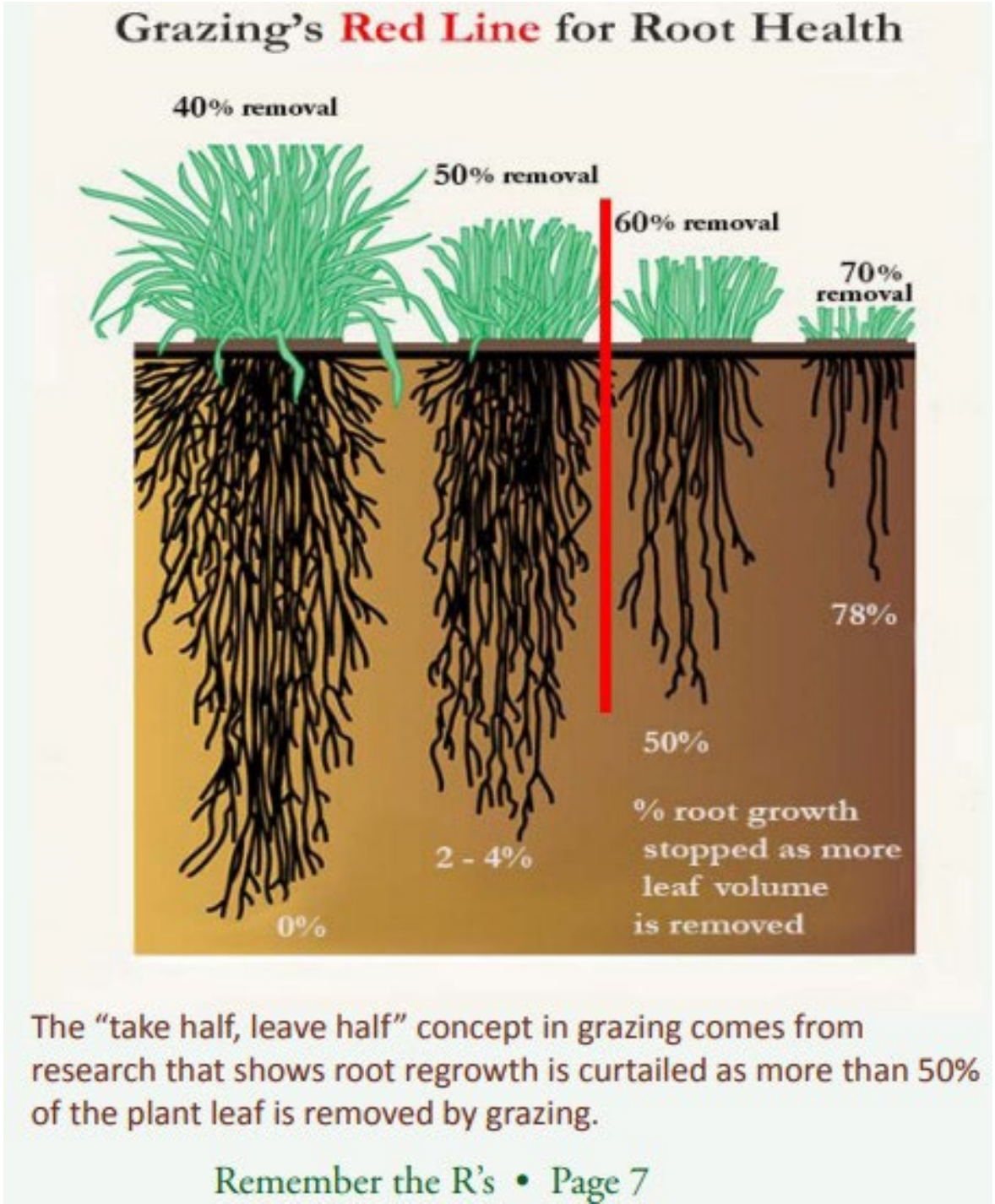


Source: McKinney, Rangelands 19(3)

Take half/leave half rule??



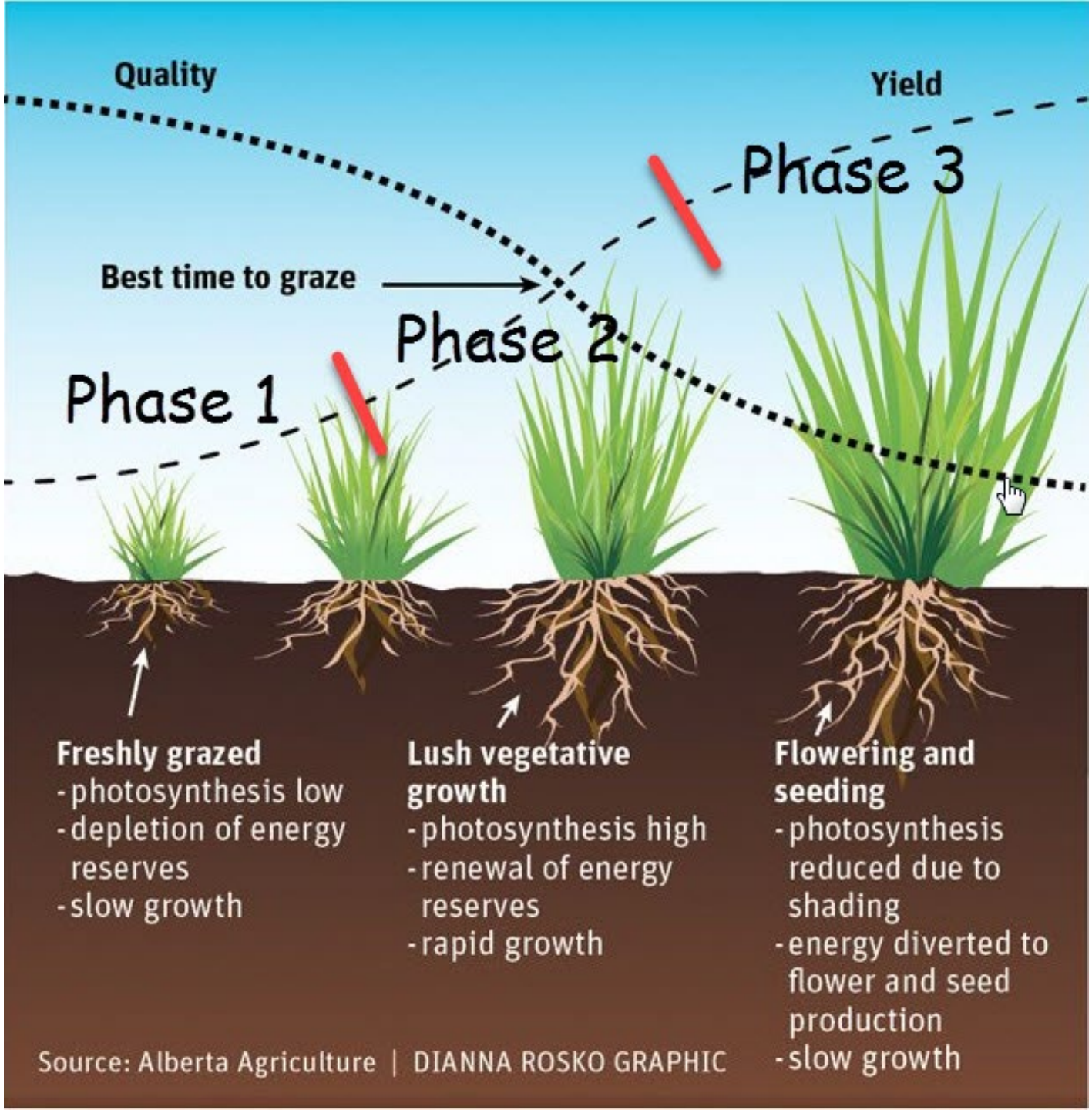
Source: Iowa State University Extension



USDA/NRCS.
Pat Guptil, Rancher,
Quinn, S. Dakota

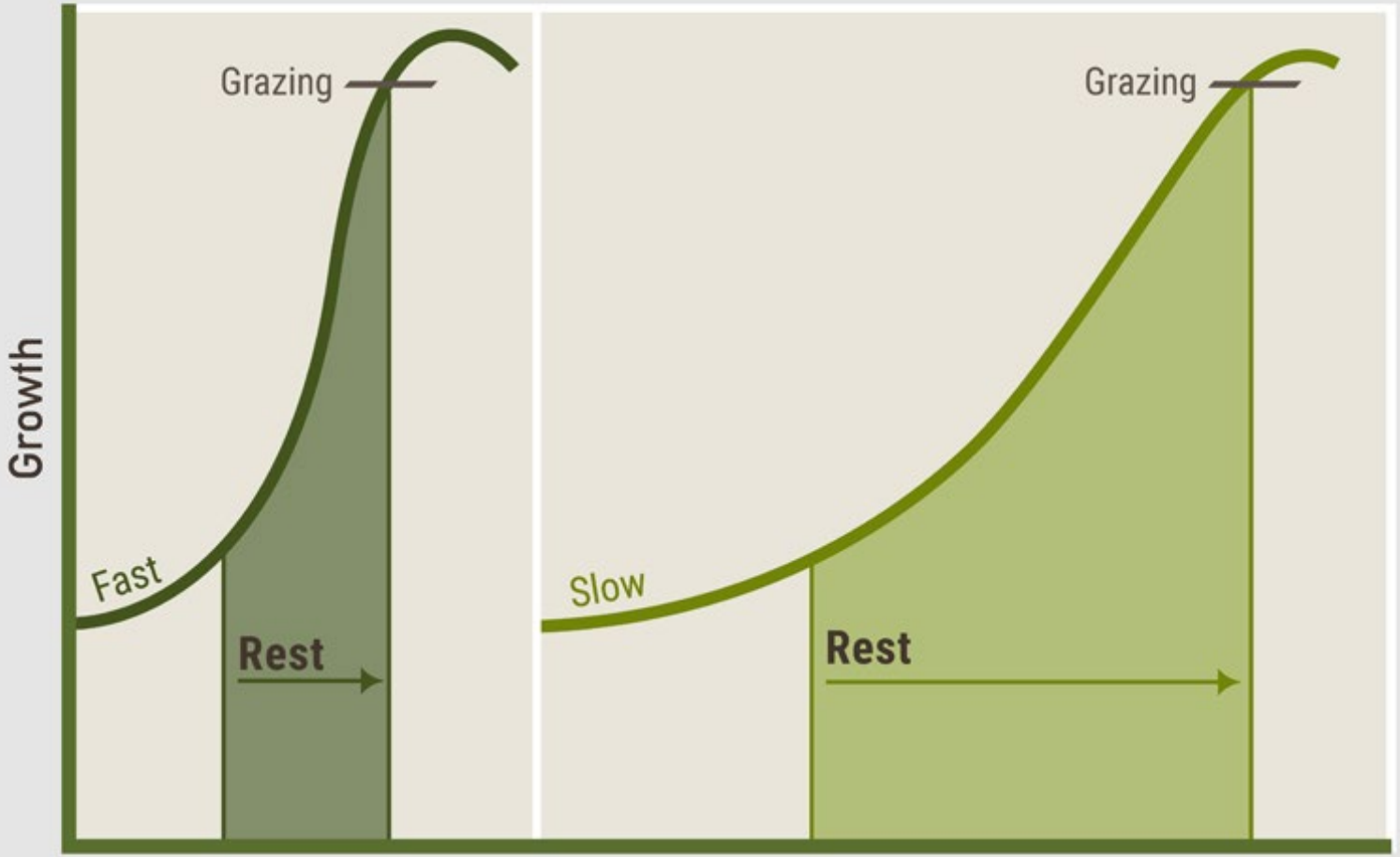
Growing Resilience Through Our Soils
South Dakota.
January 2022

Original Source:
Crider. Four Grass Species tested 1956.


Quality
Yield
Phase 3
Best time to graze
Phase 2
Phase 1
Freshly grazed
- photosynthesis low
- depletion of energy reserves
- slow growth
Lush vegetative growth
- photosynthesis high
- renewal of energy reserves
- rapid growth
Flowering and seeding
- photosynthesis reduced due to shading
- energy diverted to flower and seed production
- slow growth
Source: Alberta Agriculture | DIANNA ROSKO GRAPHIC

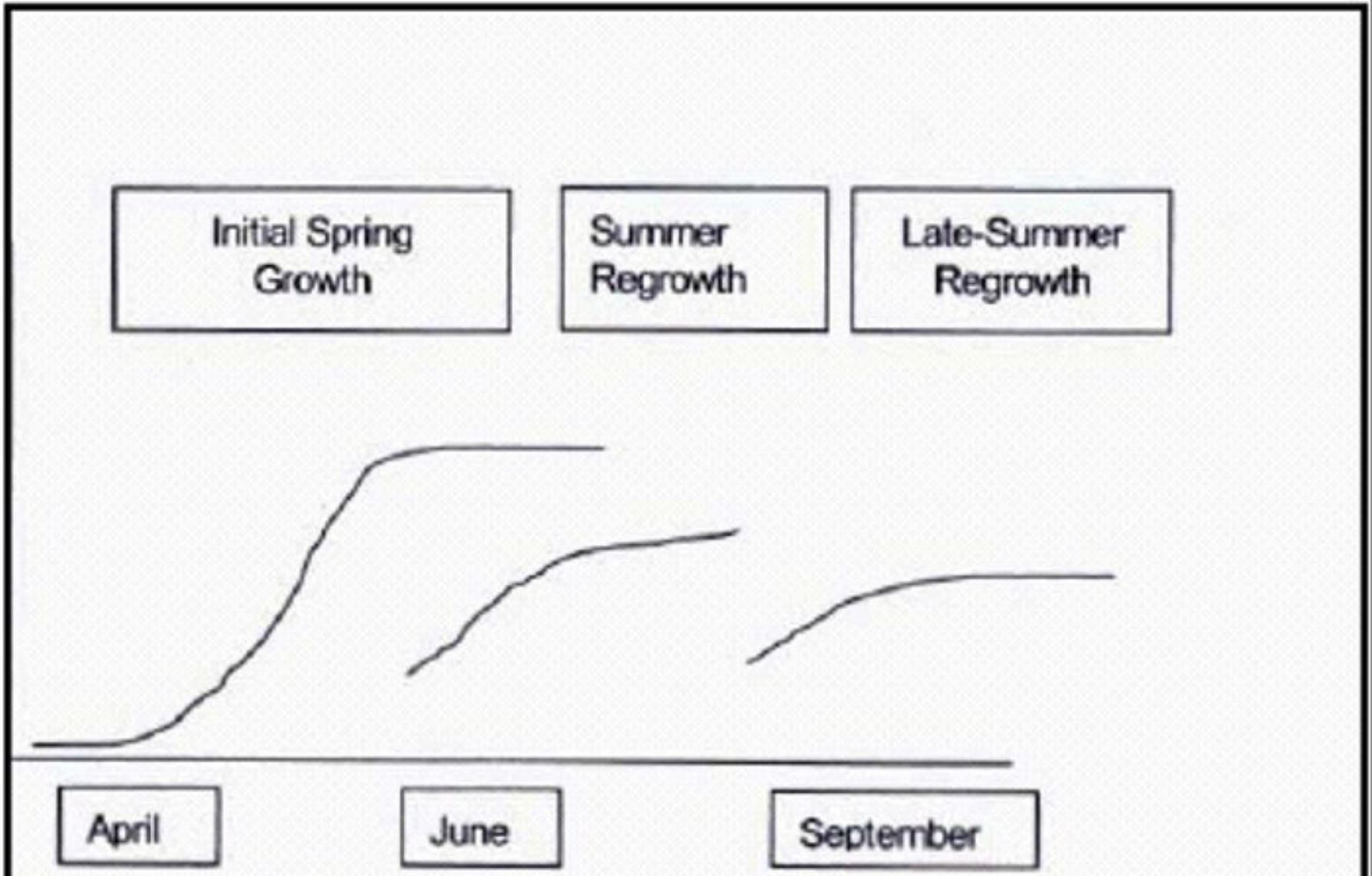
Rest Period for Recovering Forages

FAST GROWTH = Shorter Rest Period
SLOW GROWTH = Longer Rest Period



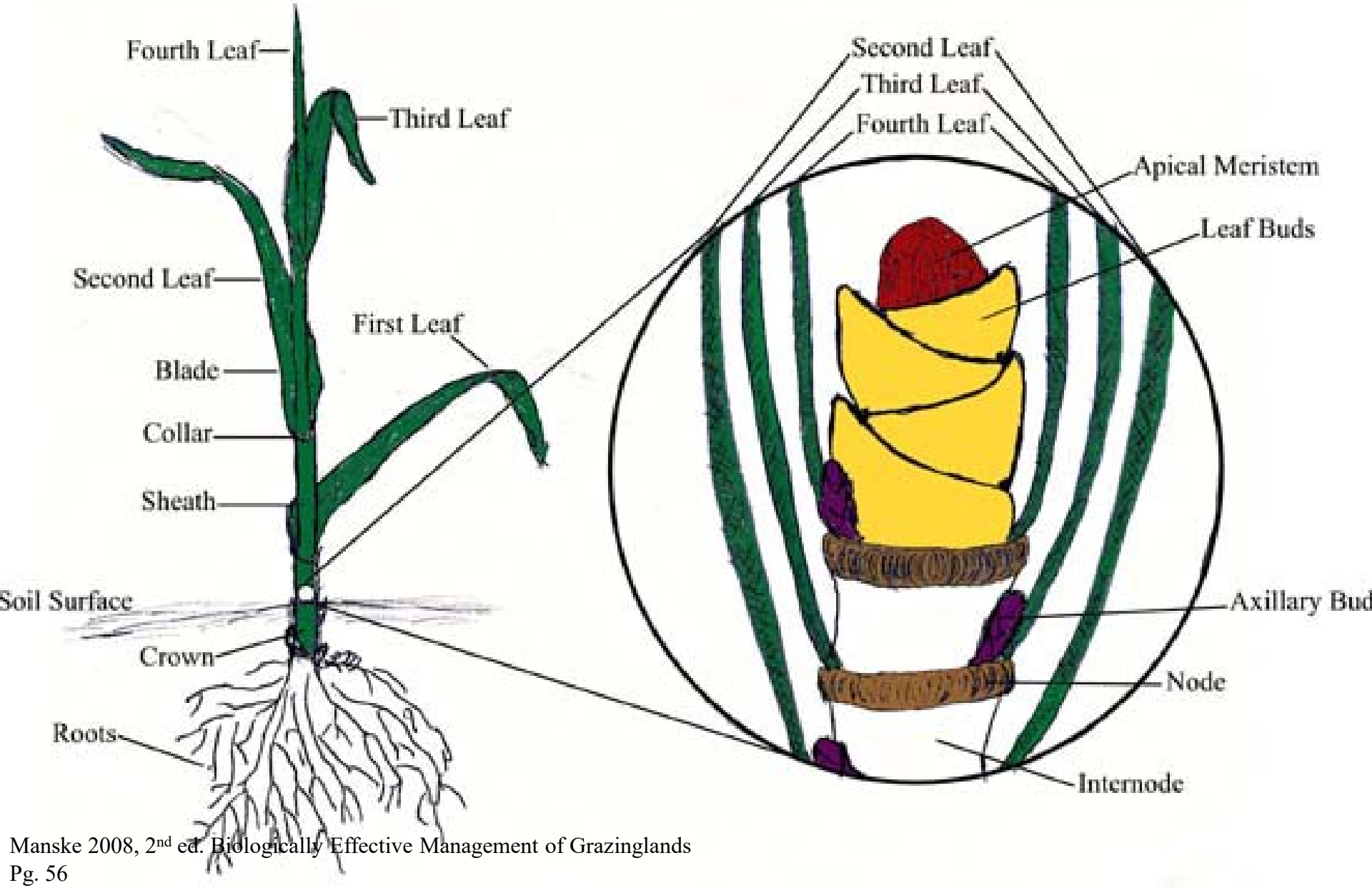
Spring **Summer into Fall**

Shape of Forage Production



. Schematic of three cycles of pasture production.

WFBG Pasture School. Pasture Production. Baron, 2004.



Manske 2008, 2nd ed. Biologically Effective Management of Grazinglands
Pg. 56

Grass Tiller at 3.5 Leaf Stage

Pasture Health Keys

- **Spring** wait until the plant is biologically ready to graze-3-3.5 Leaf Stage/tiller(tame/native)
- **Fall try to** leave 2.5 Leaves/Tiller so next year yield normal when rains come

Dr. Llewellyn Manske., et. Al.. Healthy Plants Have Smaller Forage Reductions During Precipitation Shortages. & Pasture Recovery from Drought Depends on Previous Management. NDSU. 2003

Rules of thumb "grazing types" of grasses

After 3-3.5 leaf stage recovery:

- Graze 1/3 leaf area with 1rst grazing

- Graze 1/2 to 2/3+ with 2nd grazing (eveness/profit)

Quantity of Dry Matter forage growth)

- 5+% of their body weight roughly to account for trampling/residual
- Mother with single/twins/triplets, larger ewe/nanny, size of weaned lamb/kid
- Reality 2-4% of body weight dry matter eaten

Table 2.1 Estimated Dry Matter Yield (lbs/acre) Per Inch of Height for Pasture Types and Stand Conditions			
Pasture Species	Pasture Condition		
	Fair	Good	Excellent
Smooth brome / Legume	150-200	250-350	350-450
Alfalfa	150-200	200-250	250-300
Orchard grass / Legume	150-200	250-300	300-350
Mixed Pasture	150-200	250-300	300-350

Source: ARECA. Pasture Stick.

Assumes a 6 inch high stand of forage when tips of leaves are pressed to feel resistance across palm of hand

https://www.ablamb.ca/images/documents/management-modules/An-Introduction-to-Managed-Grazing-for-Sheep-and-Goat-Producers.pdf pg. 18. Author Kosinski. Reviewers Hosford, Lane June 2013.

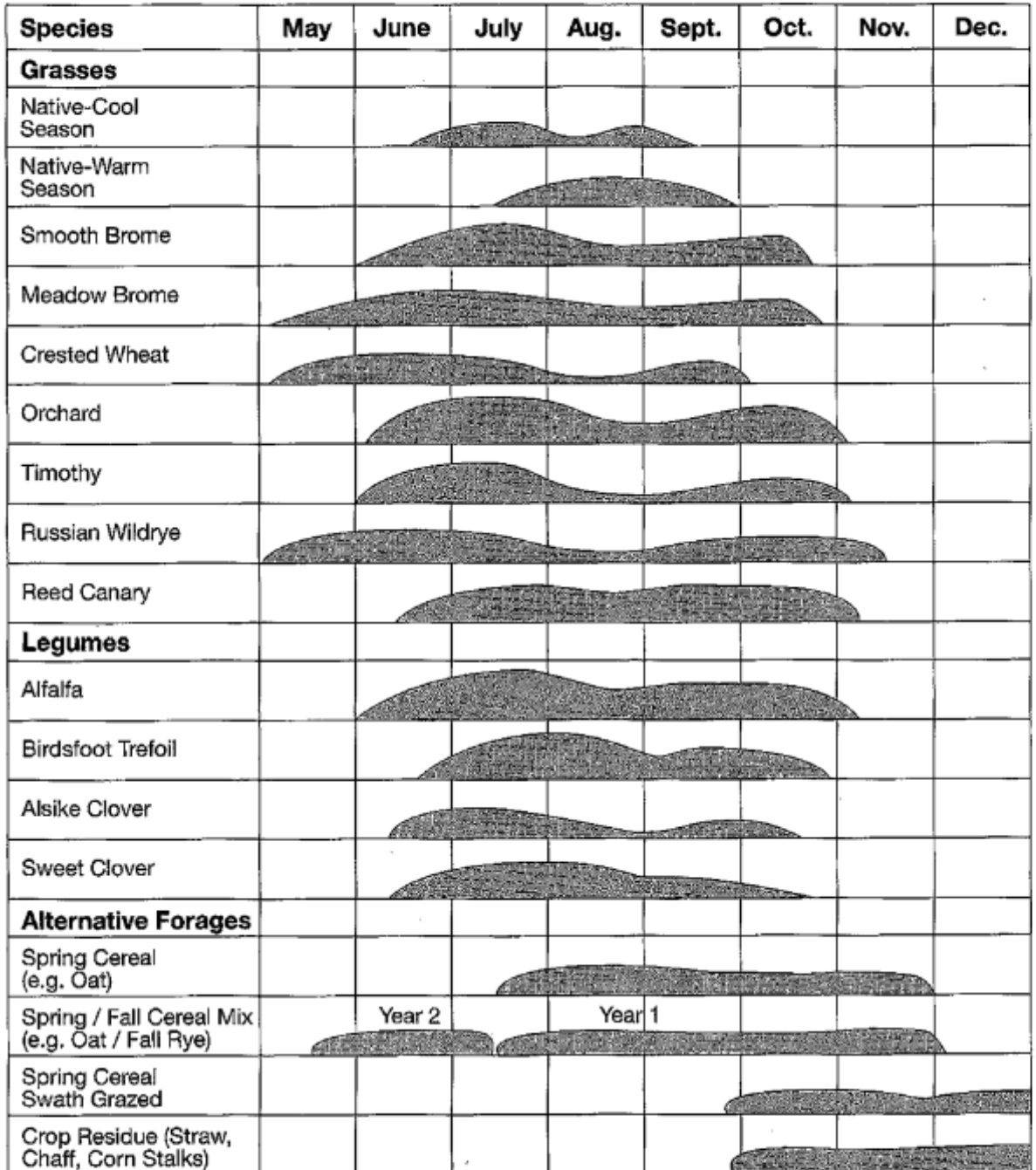
Litter/Leaf area

- Balance-Use or residual
- Sun reflectance bare soil
- Water infiltration
- Regrowth and production this and next years

Why these three?

- Legume - feed soil, grasses and animal
- Regrowth - feed animal/Soil C
- Creeping - protect the soil/flexibility/water capture

Bloat can be a problem for sheep or goats grazing some legumes like alfalfa.



https://www.ablamb.ca/images/documents/management-modules/An-Introduction-to-Managed-Grazing-for-Sheep-and-Goat-Producers.pdf pg. 1.
Author Kosinski. Reviewers Hosford, Lane June 2013.

2-7. Relative yield and period of growth of native grass and seeded pastures

Legume/Grass Pastures

- Yields equivalent to a grass pasture fertilized with 100+ # of N
- Legumes provide 10 - 50% of grass N requirements
- Animal performance is 5 - 20% higher
- Season of growth is longer

Sources: Barnes, Forages; Blaser, Forage Mgmt Systems; Gerrish, Fertility Mgmt; West and Mallarino, N Transfer Leg.-Grass

How Grasses Grow

Grasses have **determinate growth**. This means that plant growth stops once a seed head has been produced. That is critically important for forage and grazing management.

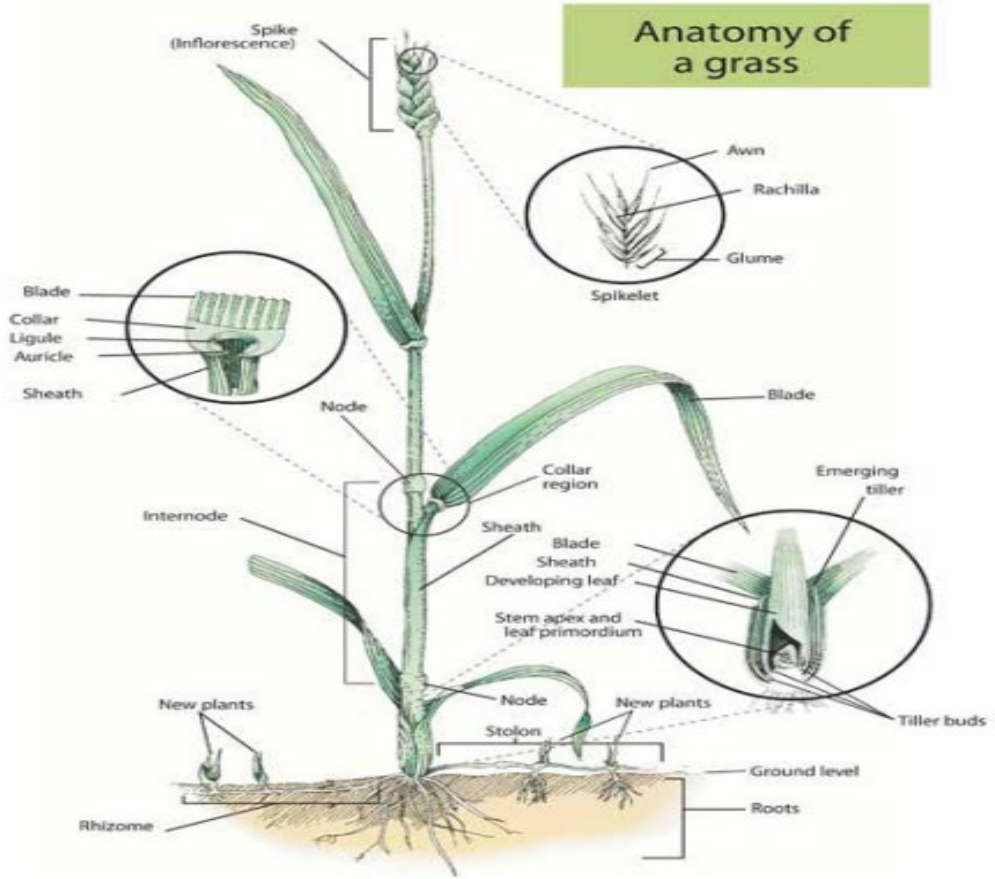
When first seeded, grass seeds germinate and a single shoot emerges from the soil.

As the growing season progresses, additional shoots called **tillers** develop from the base of each true leaf (2-2).

Removing the top growth of the grass by cutting or grazing can encourage new tillers to grow.

Determinate Growth *- vegetative growth that stops once the plant begins to flower.*

Tillers *- new stalks from the base of a plant or the axis of one of its leaves.*



2-2. Grass structure and growth

Grasses are split into two groups (3-5):

- Short-shoot: have many growing points below bite height
  - Re-grow quickly after being grazed
  - Better for pasture
  - Meadow brome grass, [redacted] or-chardgrass, Kentucky bluegrass, creeping red fescue, tall fescue
- Long shoot: have fewer growing points below bite height
  - Take longer to recover after grazing. These species need longer periods of rest be-tween grazings.
  - Better for hay
  - Timothy, smooth brome grass, crested wheatgrass, [redacted], reed canarygrass

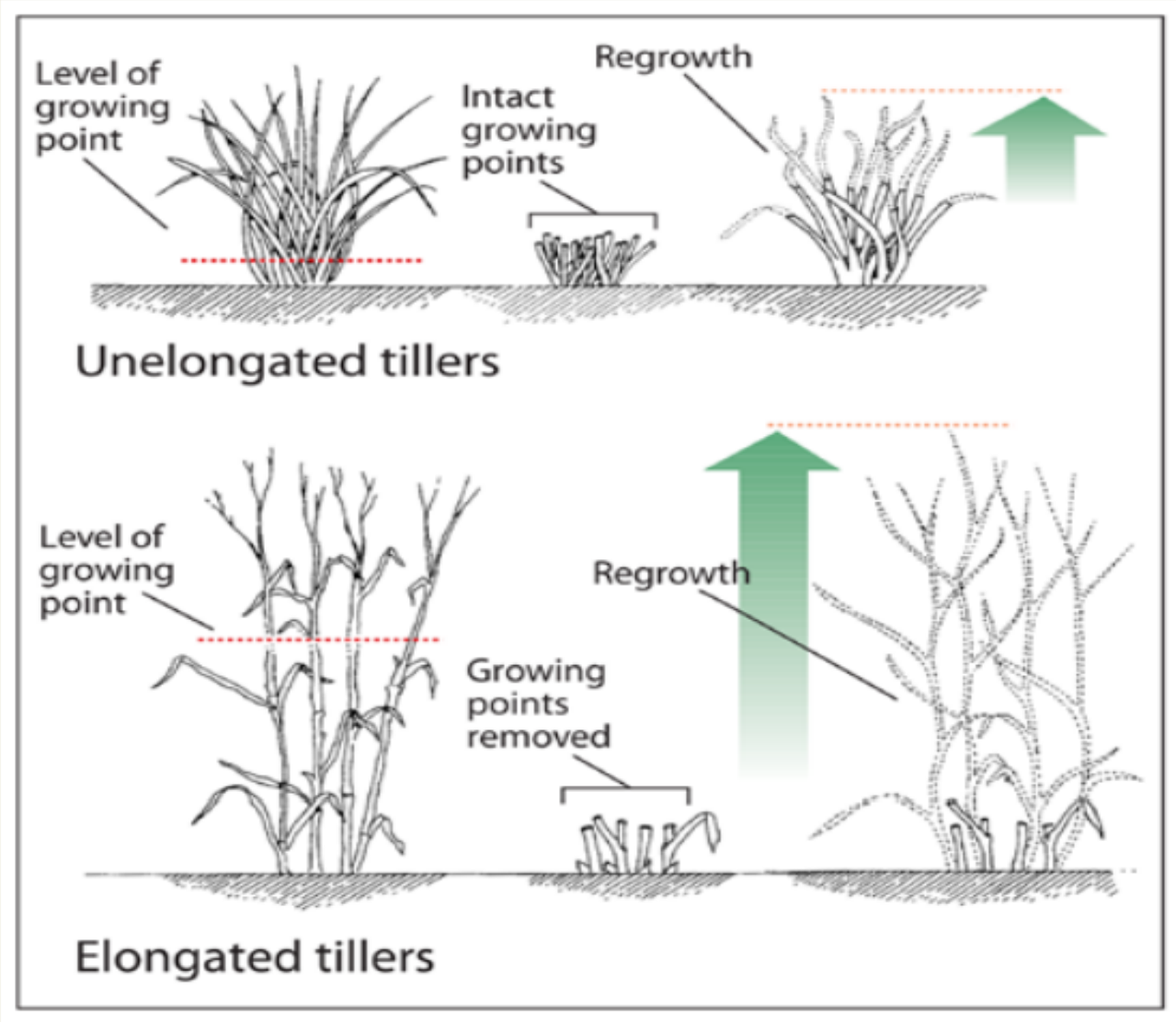
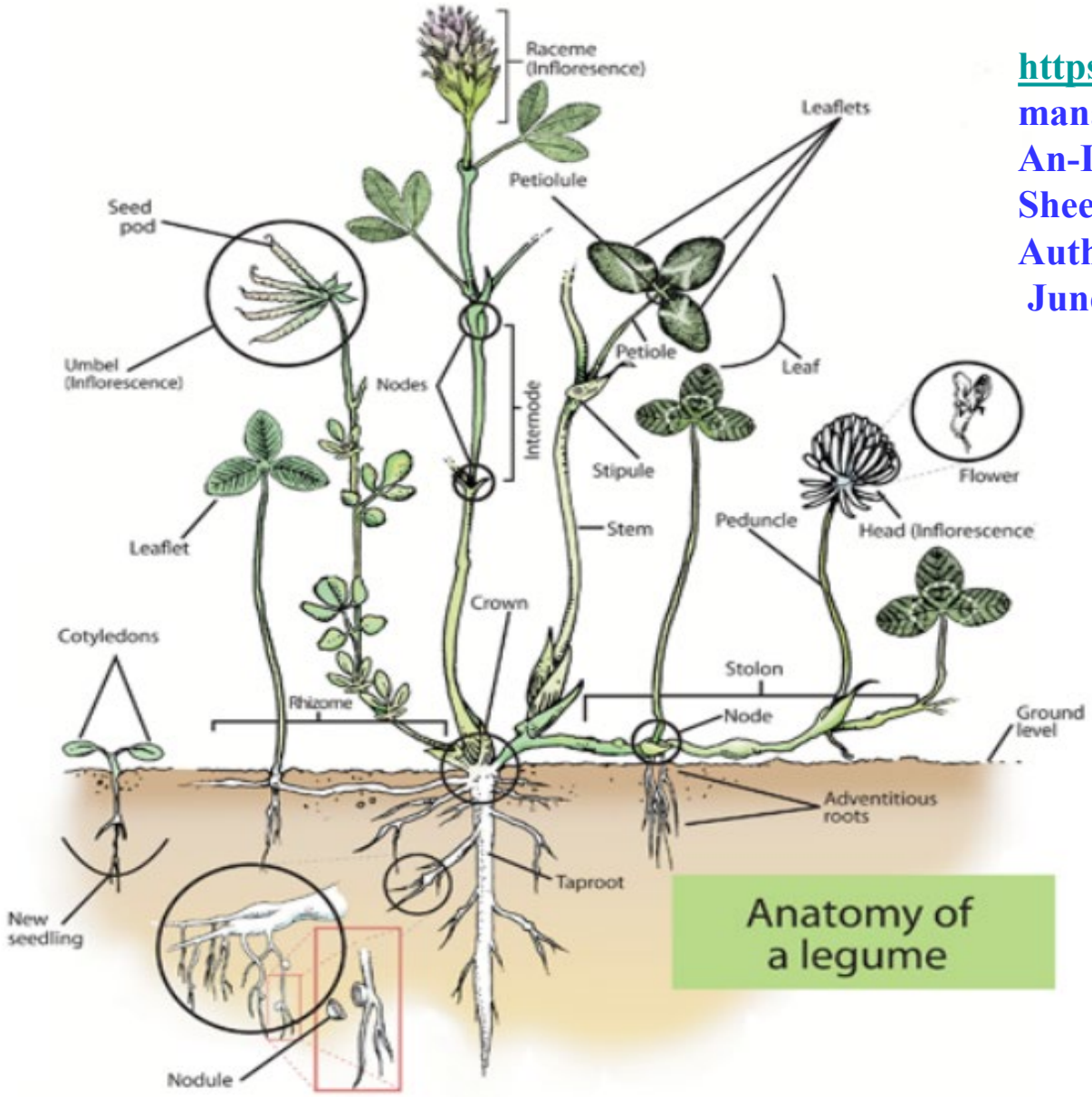


Fig. 3-5. Growing points of grasses and regrowth

https://www.ablamb.ca/images/documents/management-modules/An-Introduction-to-Managed-Grazing-for-Sheep-and-Goat-Producers.pdf pg. 31.

Author Kosinski. Reviewers Hosford, Lane June 2013.



https://www.ablamb.ca/images/documents/management-modules/An-Introduction-to-Managed-Grazing-for-Sheep-and-Goat-Producers.pdf pg. 9. Author Kosinski. Reviewers Hosford, Lane June 2013.

2-5. L

How Legumes Grow

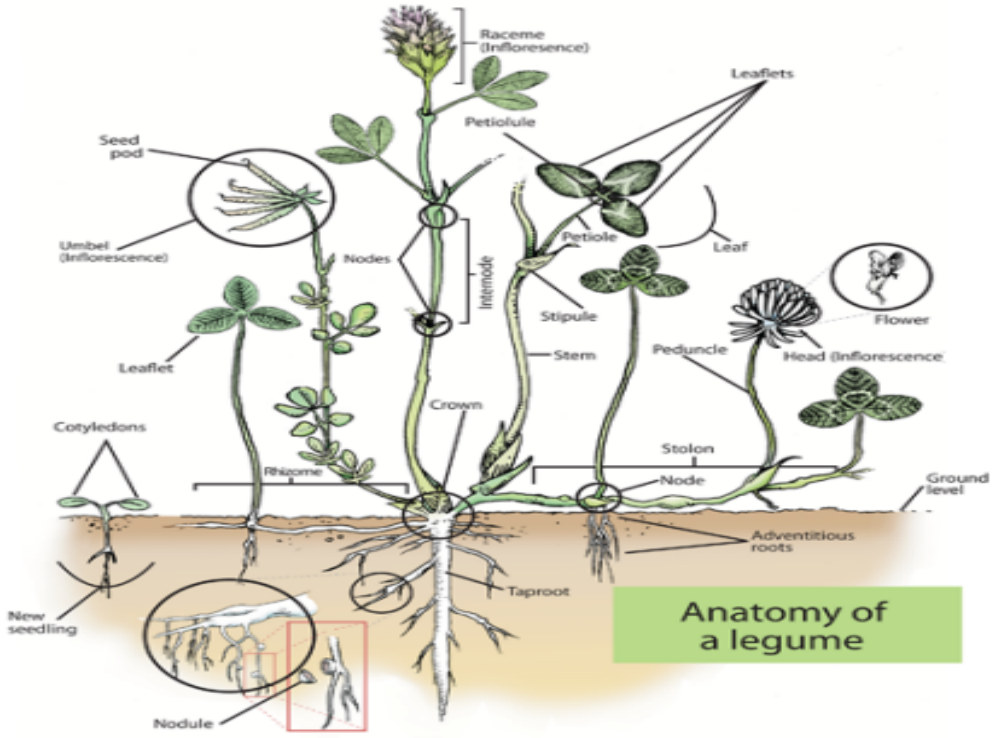
Legumes have indeterminate growth. This means that they will flower and produce leaves at the same time.

Legume seedlings have a single shoot. More shoots (tillers) come from buds that form from below the soil surface. These buds create the **crown** of the plant (2-5).

Grazing the top growth encourages the development of new buds at the crown. Shoots can also form from buds that develop in the **leaf axils** above-ground. Re-growth can come from buds in the crown or on the stem (**axillary buds**).

Some legumes spread using **stolons**, which are above-ground rhizomes. These plants are low growing and can handle heavy grazing. One example is white clover.

Legumes will flower in the year they were established and in all following years.



Legumes *- plants with seeds in a pod that split into two halves, have leaves composed of more than one leaflet and fix nitrogen.*

Indeterminate Growth *- vegetative growth in plants that does not stop once they flower and produce seed.*

Crown *- the base of a legume plant where new buds form and growth starts from in the spring. Also where carbohydrates are stored.*

Leaf Axil *- the space between the top of a leaf and the stem where it is attached.*

Axilary Bud *- a bud that grows from a leaf axil and can become a new leaf or branch.*

Stolon *- a horizontal above-ground stem that can produce a new plant.*

2-5. Legume structure

Alternative Legumes

Yellowhead Alfalfa

Sainfoin

Adaptability in our management systems, climate??

Alsike & Red Clover

Some tend to be shorter-lived, and/or lower productivity than purple alfalfa,

Birdsfoot trefoil

cicer milk vetch

BFT, Purple Prairie clover and Sainfoin have condensed tannins

Cicer Milkvetch

New Cicer milkvetch varieties establish faster

Purple Prairie Clover

Key Legumes for Wet Areas

- Alfalfa?-Yellow blossomed hardy
- Cicer milkvetch?
- Kura clover
- Bird's foot trefoil
- Alsike clover
- Red clover

Key Legumes for Dry Areas

- Alfalfa- Yellow blossomed hardy
- Cicer Milk vetch-slow establish
- Sainfoin-Careful with Variety
- Sweet clover

In all situations pastures will be altered over time due to grazing patterns and management practices or lack of them. Good pasture is not a given, it is managed. If land health and diversity is part of your overall strategy, do your best to select the grasses you feel are proper and be prepared to give the process some time.

Quote taken from Dog Tale Ranch-Arlette Seib website-Blog and
Crooked Fences-The Sheep Ranching Newsletter

Videos

Oxbow Ranch (the Stein's) & Gibson's are Skilled Graziers

and

Factsheets are excellent .

s

https://www.ablamb.ca/index.php/resources/farm-and-flock-management/nutrition-and-grazing

Grazing Management: https://ablamb.ca/index.php/resources/farm-and-flock-management/nutrition-and-grazing

An Introduction to Managed Grazing (ALP Management Module): With ever-increasing land and feed costs lamb producers are looking to make the most of their pastures. Managed grazing helps get the most out of pastures by looking after the forages and improving pasture productivity; by selecting forages that can help extend the grazing season and reduce 'days on feed'; and by managing pastures to meet the nutritional needs of a flock. This module covers the proper techniques for pasture rotation, paddock management and the pros and cons of each type of forage that is available in Western Canada. https://ablamb.ca/images/documents/management-modules/An-Introduction-to-Managed-Grazing-for-Sheep-and-Goat-Producers.pdf

Forage Growth and Intensive Grazing Basics (ALP fact sheet)

•When To Open and Close the Gate (ALP fact sheet)

•"Filling Feed Holes In The Feed Year" (ALP fact sheet)

•Fencing in Alberta (ALP fact sheet)

•Targeted Grazing for Vegetation Management Resources (Grassland Restoration Forum)

•Videos on sheep grazing are also here

•Saskatchewan Sheep Development Board-https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/livestock/cattle-poultry-and-other-livestock/sheep-and-goats/grazing-management-for-sheep-production

•https://sksheep.com/services/fact-sheets-information/#videos One is on Grazing and forages.

https://www.gov.mb.ca/agriculture/livestock/sheep/forages-and-pastures.html

https://www.gov.mb.ca/agriculture/livestock/goat/pubs/goats-and-their-nutrition.pdf

https://www.gov.mb.ca/agriculture/livestock/goat/pubs/feeding-the-doe-herd.pdf

https://www.albertagoats.com/about-goats

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https://canadianmeatgoat.com/wp-content/uploads/2022/01/ConservingPasture.pdf

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https://canadianmeatgoat.com/wp-content/uploads/2022/01/FencingForPredators.pdf

Ed Rayburn,

Extension specialist, West Virginia University Extn Service

- Remember that before renovation, a pasture is in balance with the soil fertility and grazing management used
- Without changing the grazing or fertility management, a new seeding will revert back to what was there before

Source: Ed Rayburn, Walk-in Seedings, West Virginia University Extension Service. April 2014

Sod Seeding

- Assess Plants present/Fertility
- Question how got there-now..
- Bare ground?
- Stand suppression or removal
- Time sod seeding to moisture
- Seed soil contact-drill, broadcast
- Plan for not grazing?.. Patience/ manage competition

An Introduction to Managed Grazing

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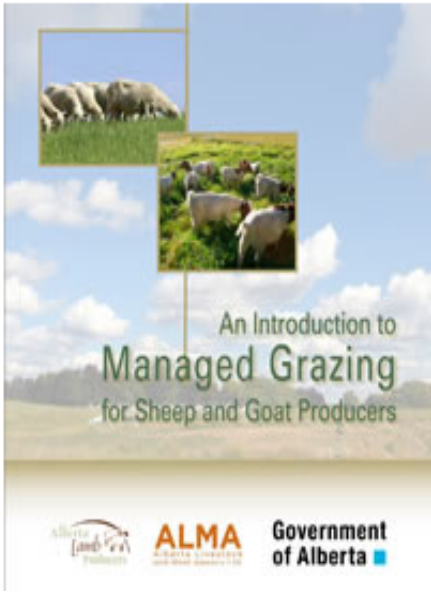
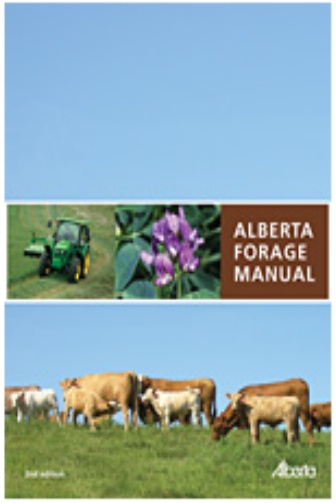
This publication has been made possible through joint funding from Alberta Agriculture and Rural Development, and Alberta Livestock and Meat Agency.

An Introduction to Managed Grazing (- 3 MB)



Alberta Lamb Producers website- Module



The new *Alberta Forage Manual, 2nd Edition*, offers producers comprehensive information on a range of forage topics: adaptation, legumes and grasses, annuals, mixtures, establishment, fertility, pasture management, harvesting and rejuvenation. In addition, sections on forage pest insects and diseases present detailed discussion of these problems in forage crops, helping producers diagnose damage. The extensive descriptions of forage species and their growth habits will help in planning forage management programs. Fully illustrated with colour images, line drawings, tables, charts and graphs, this forage reference work provides a wealth of information.

350 pages.

Agdex 120/20-1

$30.00

https://open.alberta.ca/dataset/3c314aac-a373-424f-9636-eb69b40f416e/resource/17d48b63-90bd-49b4-ad88-78a618febcd9/download/120-20-1-2009.pdf

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