Advantages and Challenges of Multi-species Grazing

Randy Saner
Extension Educator

EXTENSION

Multi-species grazing

- To control weeds and brush, while yielding more pounds of gain per acre.
- To increase carrying capacity of pasture.
- To control parasites.
- To diversify income.
- To reduce predation.

Cattle, sheep, and goats have complementary foraging behavior.

Sheep/goats and cattle and horses generally do not share the same parasites.

Decrease Risk

- Disease
  - Break Each Others Parasite Cycles
  - Very Few Diseases that Cross Species
- Drought
- Marketing
  - More Opportunities to Sell

Decrease Overheads

- Labor
  - Fence
  - Fall and Winter Cattle Work
- Land
- Add one Ewe or Doe per cow

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Harvesting Multiple Layers Off the Same Land

- Decrease Marketing Risk
- Increase Diversity
- Spread Out Labor and Other Overheads

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Adding Sheep or Goats to a Cattle Operation

- Profitable
- Labor Management
- Wool
- Family Friendly
- Positive Range Impact
- Enterprise Stacking
- Meet New People
- Fencing
- H2A Program
  - Bringing in a trained work force
- Guard Dogs
  - Reduce predator loss
- Cold May Rains can be a problem
- Lamb with wool on if in pasture
- Prejudice Against Sheep
- Steep Learning Curve

N EXTENSION

Double M Farms (Mixed Livestock Operation)

- 40 (1200lbs.) cows 230 (130lbs.) ewes and 40 (130 lbs.) does on 400 acres 7.5 ewes = 1 AU 7.5 does = 1 AU and 1 cow = 1.3 AU
- Pasture based rotationally grazed pastures at two locations 3 miles apart
- 16 paddocks (240 acre)
- 13 paddocks (160 acres)
- 48,000 lbs. of cattle, 29,900 lbs. of sheep and 5,200 lbs. of goats
- 83,100 lbs. on 400 acres = 207.75 lbs. per acre stocking rate
- By using rotational grazing and multi species you are able to have more lbs. sold per acre on the same land.

AU = Animal Unit 1,000 lbs.

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Gross Income/ Brood Stock A. U. Double M Farms

	2011	2012	2013	2014	2015	2016	2017
Overall Ave	$685	$740	$1026	$947	$1375	$1351	$1725
Does	$221	$752	$435	$1137	$983	$694	$1137
Ewes	$1067	$850	$1459	$1687	$1530	$1491	$1926
Cows	$448	$659	$764	$587	$578	$888	$704
$ gross income per acre							
	$129	$152	$145	$169	$176	$232	$229
2017 Feed Expenses/AU		2017 Vet Expenses Per AU	Expense Per AU	Total Expenses	Gross income Total	Gross Income per AU	Net Income over Variable costs
Does	$142	$29.40	$171.40	$914.13	$7928.36	$1486.57	$7,014.23
Ewes	$48	$29.40	$77.40	$3302.40	$54,629.60	$1781.44	$51,327.20
Cows	$48	$15.69	$63.69	$3311.88	$26,566.63	$718.27	$23,254.75
Total	$238	$74.49	$312.49	$7528.41	$89,124.59		$81,596.18

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GRAZING PREFERENCES

- Goats - Browse
- Sheep - Forbs
- Cattle - Grass
- Deer - Browse

PERCENTAGE GRASS, FORBS, & BROWSE IN DIETS

	Grass	Forbs	Browse
Sheep	61	17	22
Goats	45	12	43
Cattle	81	12	7
White-tailed Deer	12	36	52
Horses	90	6	4
Elk	64	16	20

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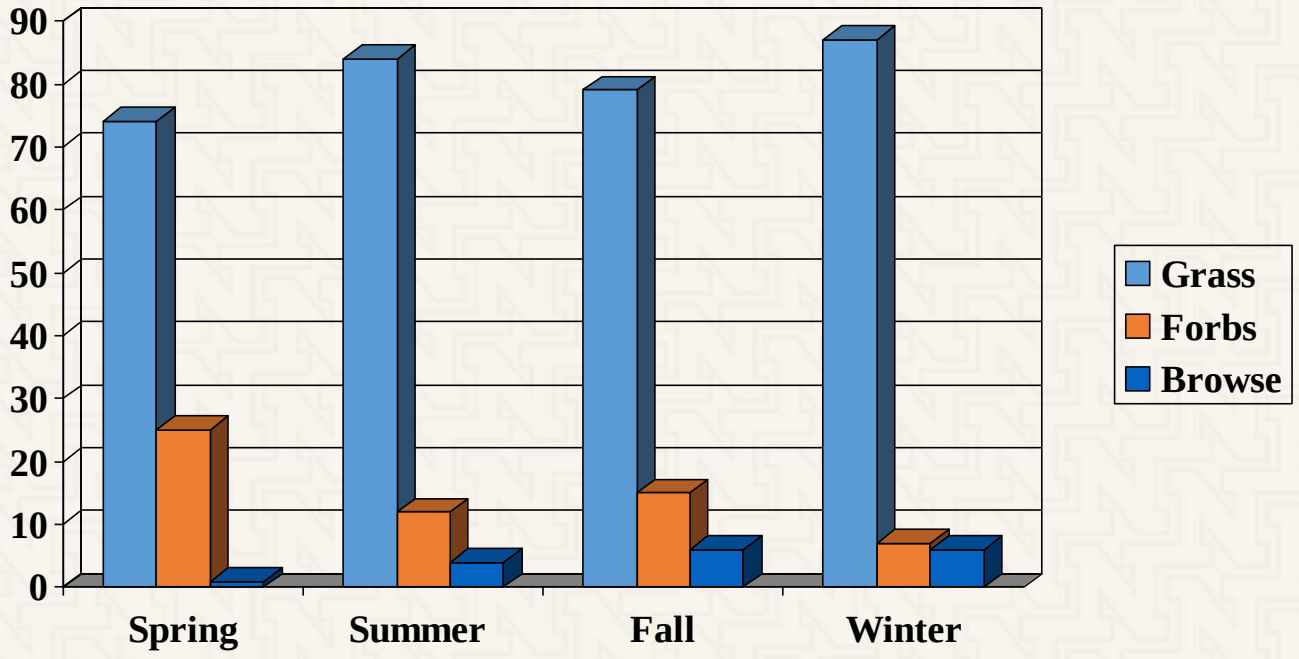
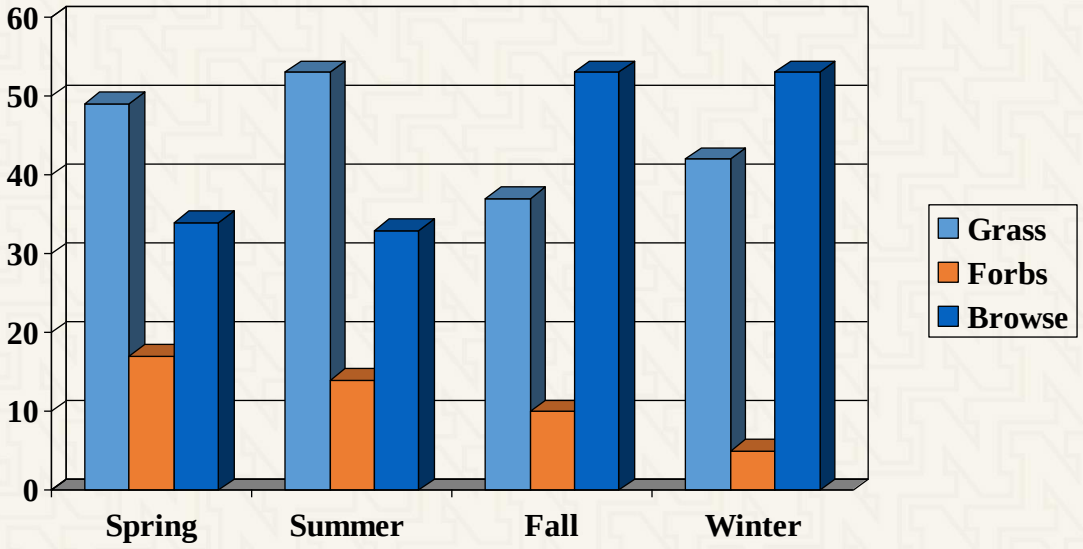
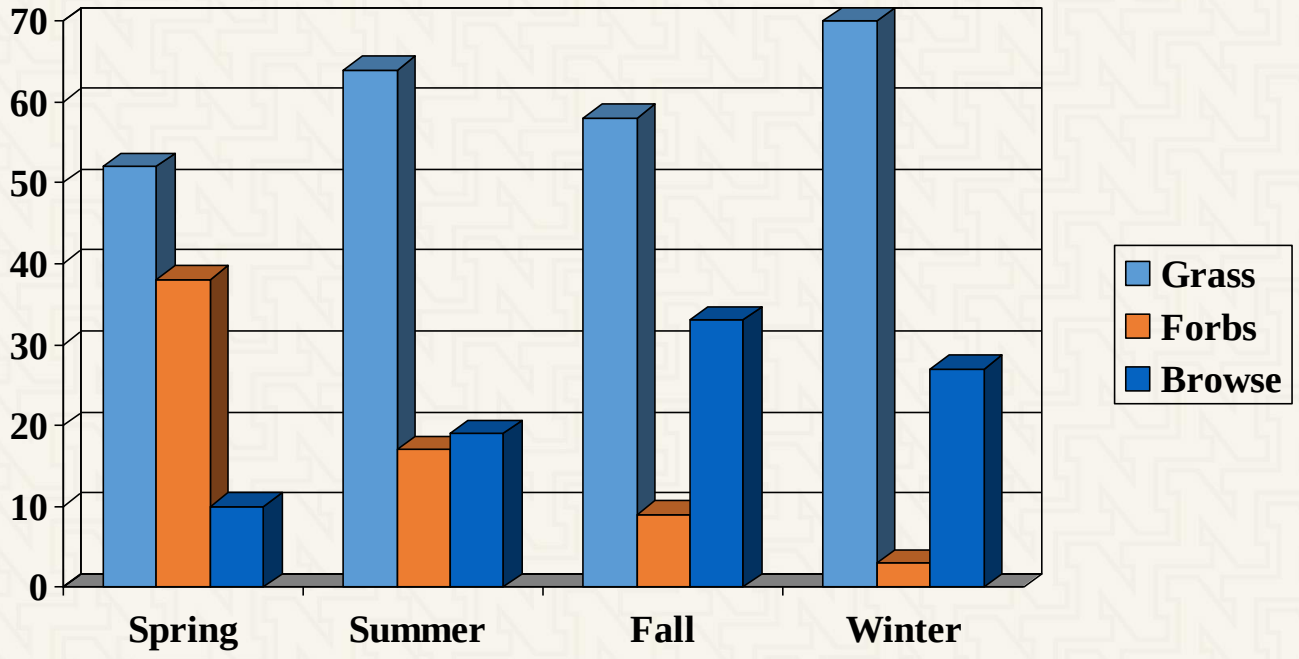
SEASONAL DIET COMPOSITION FOR CATTLE



SEASONAL DIET COMPOSITION FOR GOATS



SEASONAL DIET COMPOSITION FOR SHEEP



Foraging behavior of goats

- Browsers – prefer woody plants, shrubs, vines and leaves.
- Top-down grazer, graze evently (first grazer)
- Tend to select grass over clover
- Inclined to graze steeper, higher, drier areas.
- Like to graze fencelines
- Have a tolerance for tannins and other bitter compounds.
- Tend to have fewer problems with plant toxicities.

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Foraging behavior of sheep

- Prefer forbs (weeds)
- Eat grass and browse
- Like clover
- Graze close to the ground
- Inclined to graze higher, drier areas
- Shy away from wet areas.
- Tolerant of salt.

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Sheep and goats for vegetation control

What affects what an animal will consume?

- Availability of other plant species.
- Season
- Presence of other grazing animals.
- What species of plants animals were exposed to as juveniles (young learn from their mothers what to eat).
- Anti-quality factors
- Breed

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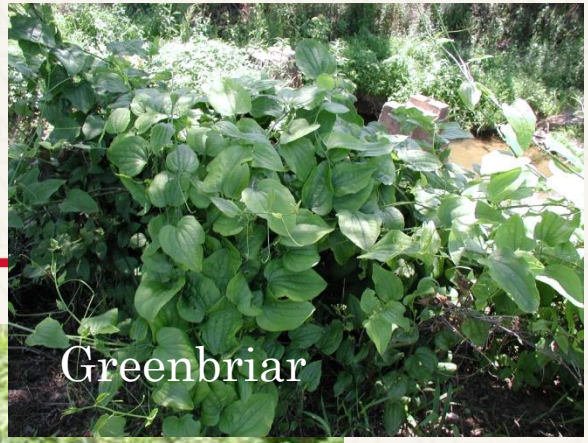
Browse (Goats Prefer)

Brush, briars, shrubs, trees, leaves, bushes



Contain higher levels of crude protein and Phosphorus than grass.

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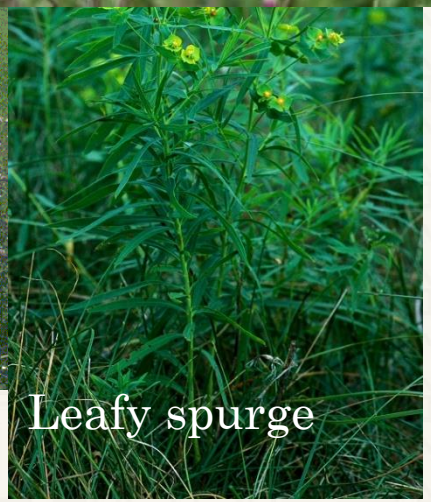
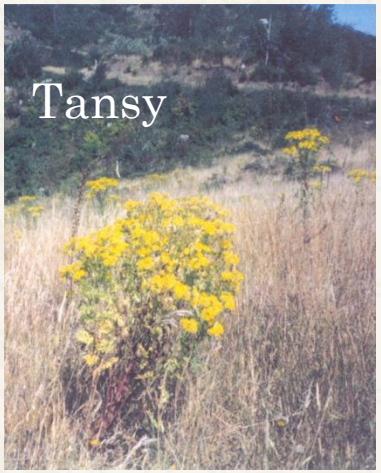
Forbs (sheep prefer)

Broad-leaf weeds





Contain higher levels of crude protein and Phosphorus than grass.

Legumes (sheep & cattle prefer)

Pasture should contain 35-40 percent legumes

- <u>Advantages</u>
  - Fix nitrogen
  - High quality than grasses
  - Greater intake by animals
  - More productive during summer than cool season grasses.
- <u>Disadvantages</u>
  - Harder to maintain in pasture
  - Bloat concerns
  - Estrogen content

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Warm season and native grasses

Why?

- To provide forage during summer when cool season grasses are less productive.
- To enable stockpiling

But . . .

- Are harder to establish
- Sheep have generally not performed as well as cattle on warm season grasses. Goats???

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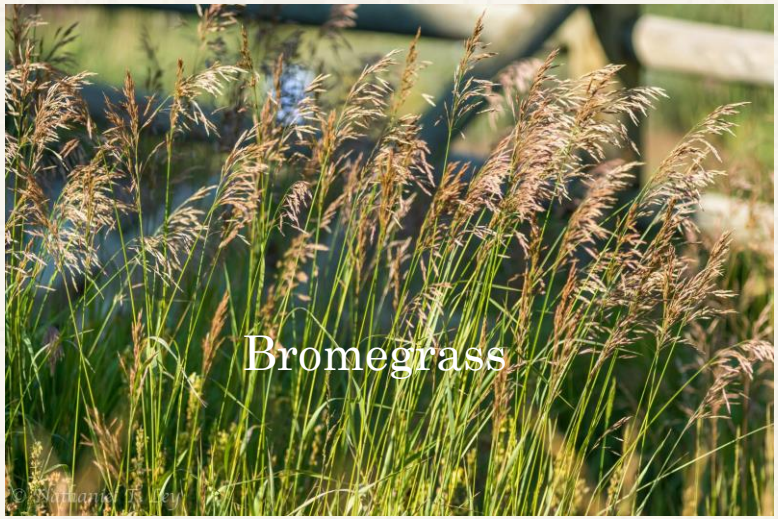
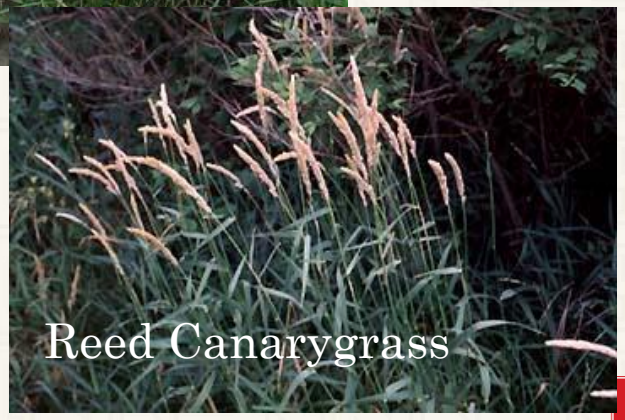
Cool Season grasses



Chicory



- Form the basis of most permanent pastures in Eastern Nebraska.
- Can provide greater yields of high-quality forage than weeds and brush.

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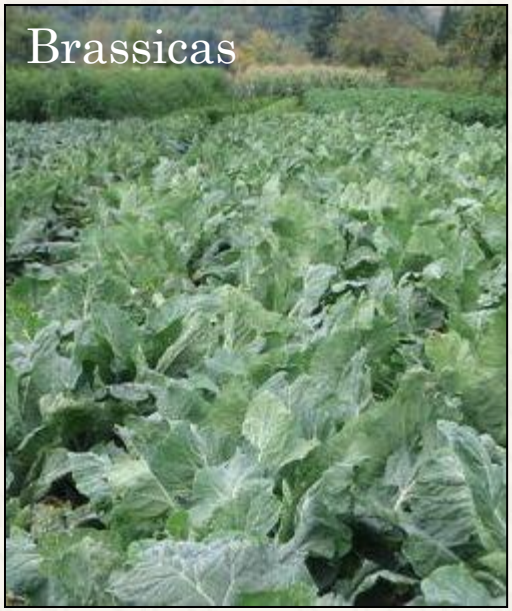
Winter Annuals

Small grain, annual ryegrass, matua prairie grass



Provide grazing during late fall, winter, and early spring.

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Co Grazing Near Nelson Nebraska

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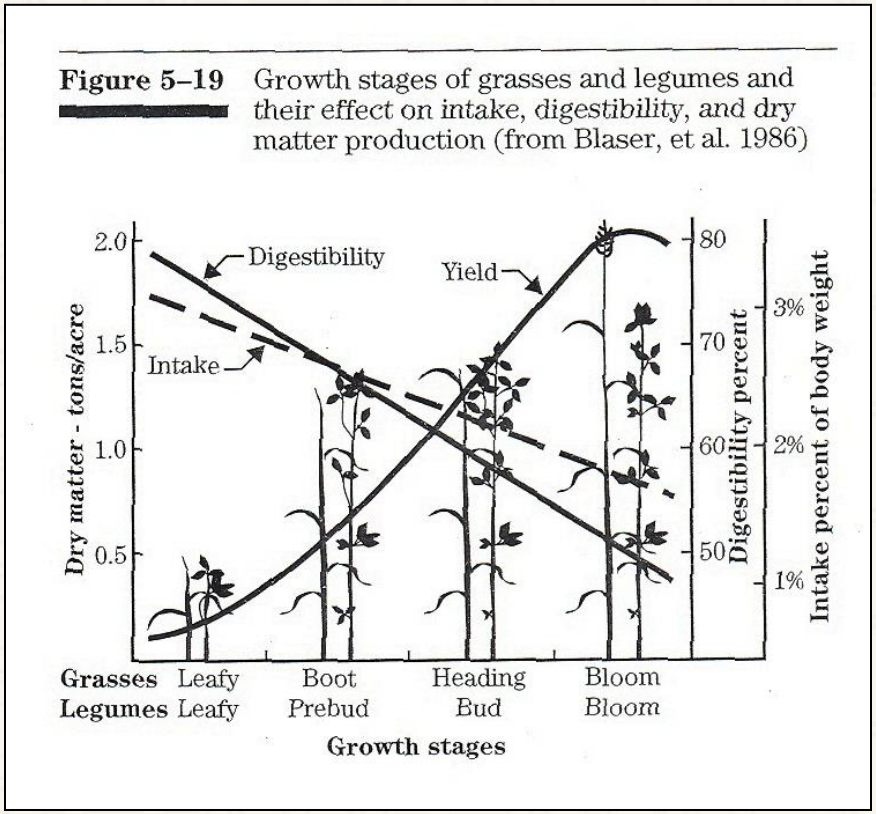
Elements of Good Grazing Management

1. Stocking rate
2. Timing of grazing (season of use)
3. Distribution
4. Kind/class of livestock

Grazing management/system

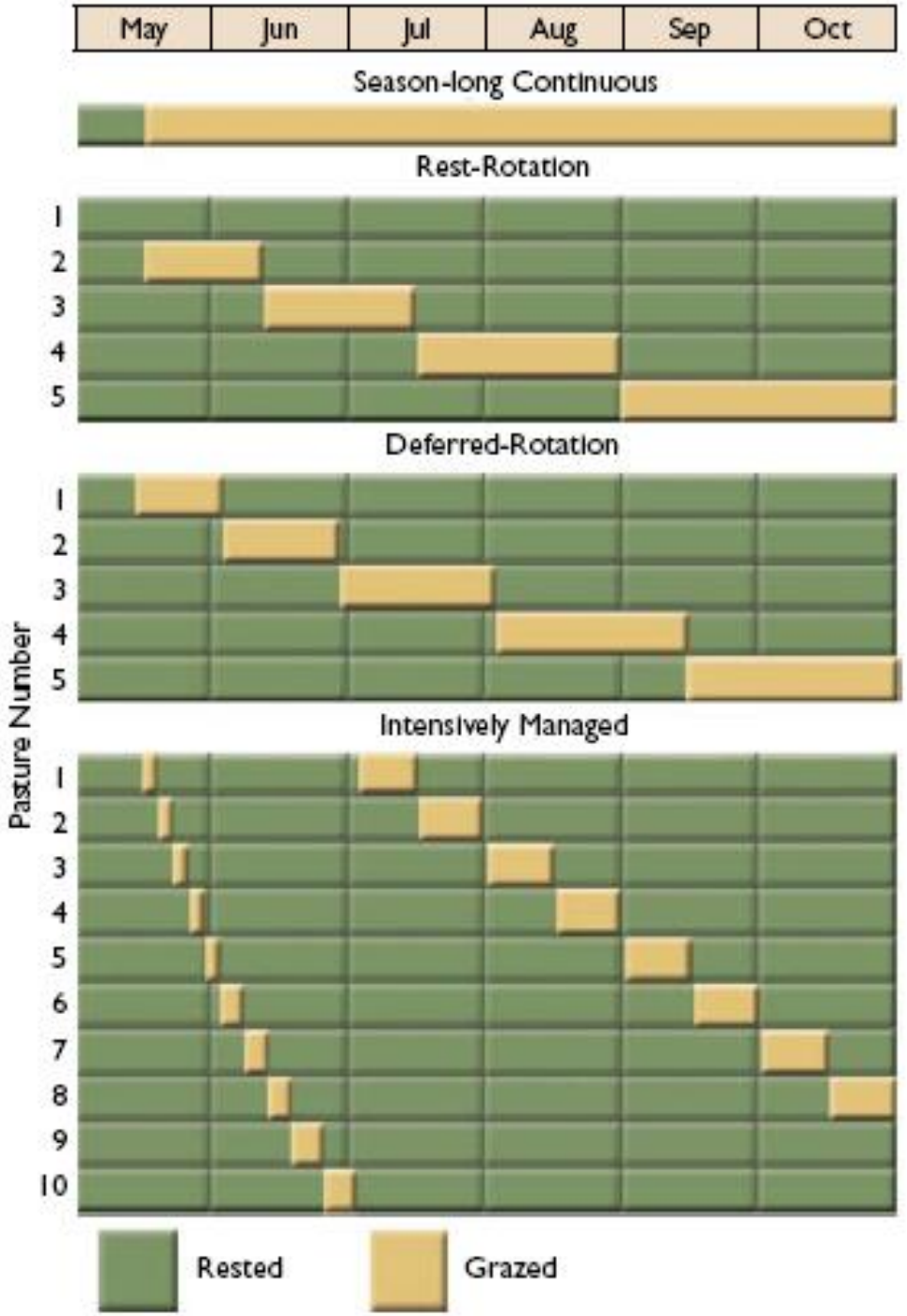
A compromise between production per head and production per acre



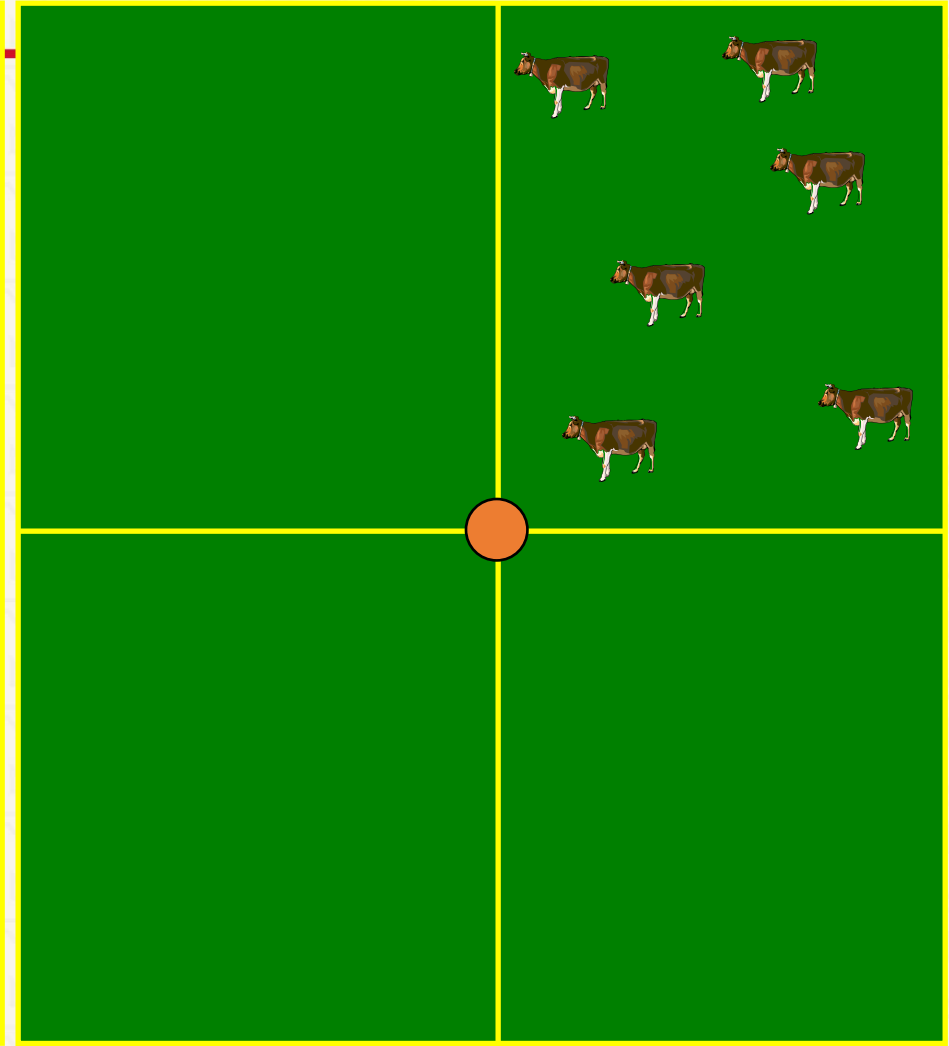
- Rotational grazing recommended over continuous grazing
  - Increases forage production and quality of forage
  - Reduces selective grazing by livestock
  - Increases plant diversity
  - Helps to control weeds.
- Pastures should be grazed a week before the grass heads out. Legumes should be grazed in early or mid-bud stage.
  - “Take half- leave half” - don’t graze below 2 inches.
  - There is no “best” number of paddocks.
  - More paddocks will allow for longer rest periods (better parasite control).
    - 30-day rest period, 3-day grazing period = 10 paddocks.

Grazing Management

Perennial Native and Seeded Pasture


May
Jun
Jul
Aug
Sep
Oct
Season-long Continuous
Rest-Rotation
Deferred-Rotation
Intensively Managed
Pasture Number
1
2
3
4
5
6
7
8
9
10
Rested
Grazed

EXTENSION



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Improved Grazing Distribution
Increased Grazing Efficiency
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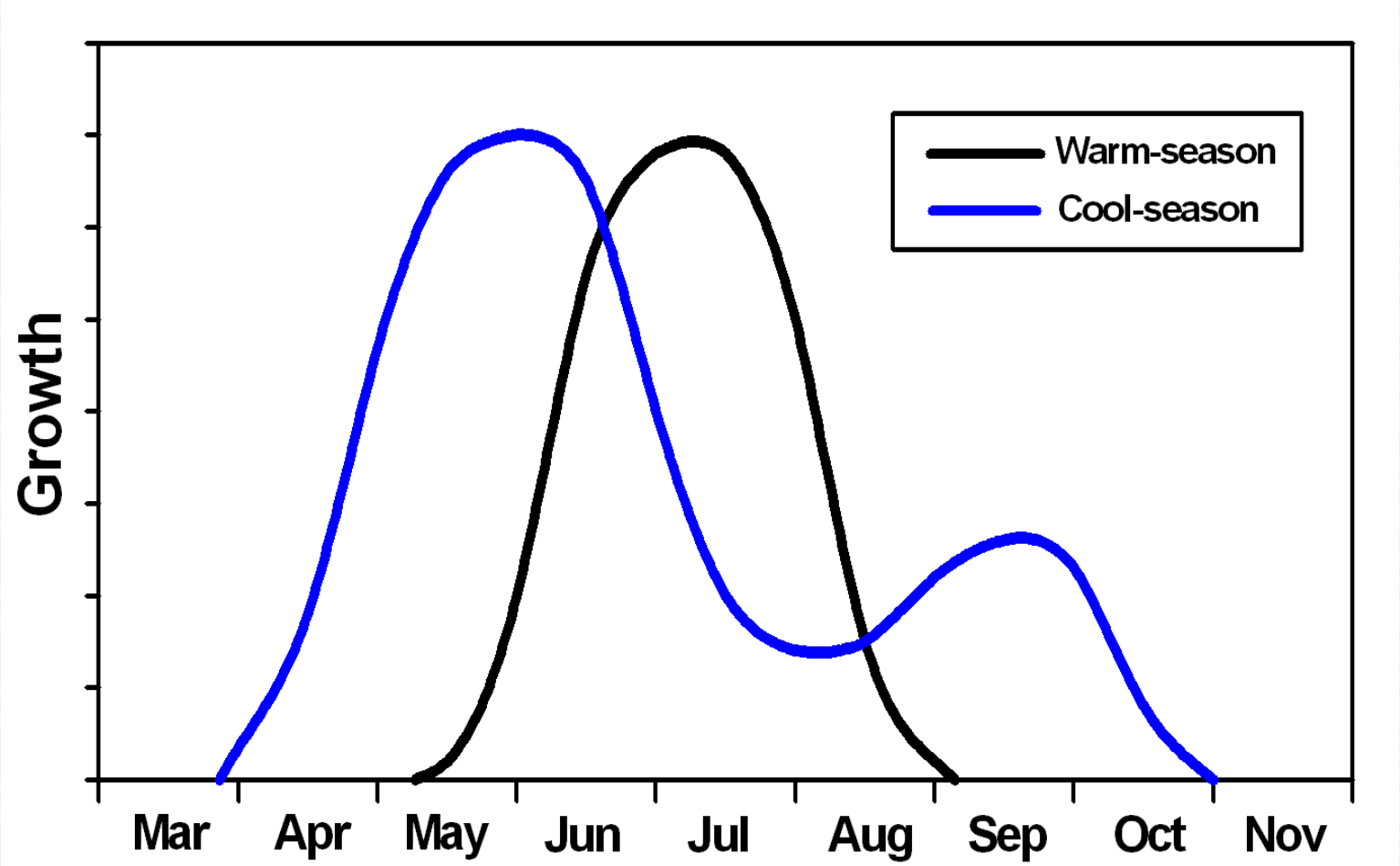
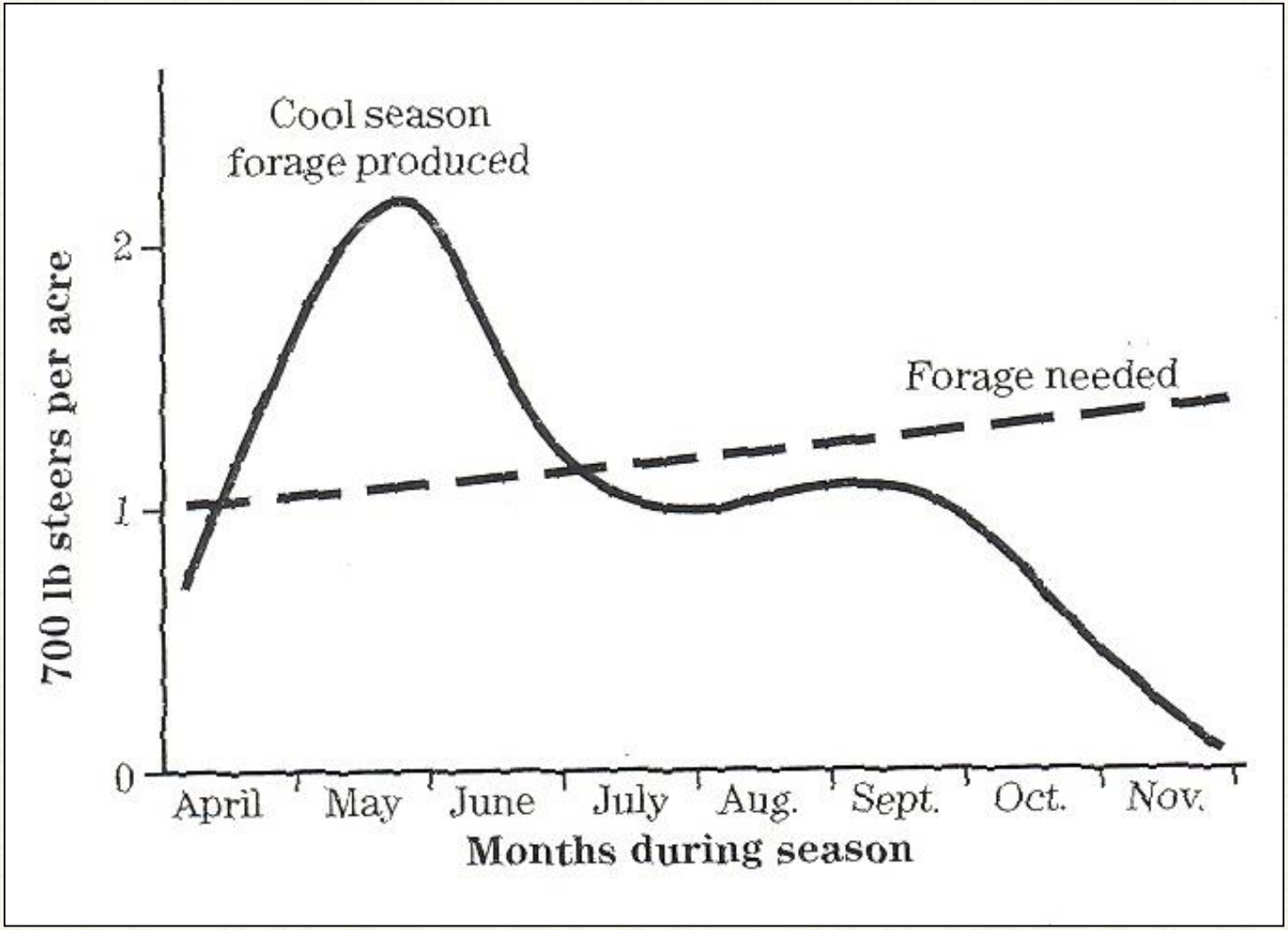
Seasonal growth



The Pasture Dilemma



What do you plant?

There is no perfect forage/grass for sheep and/or goats.

- Cool season grasses
- Legumes
- Warm season grasses
- Winter annuals
- Forbs (broad leaf weeds)
- Browse

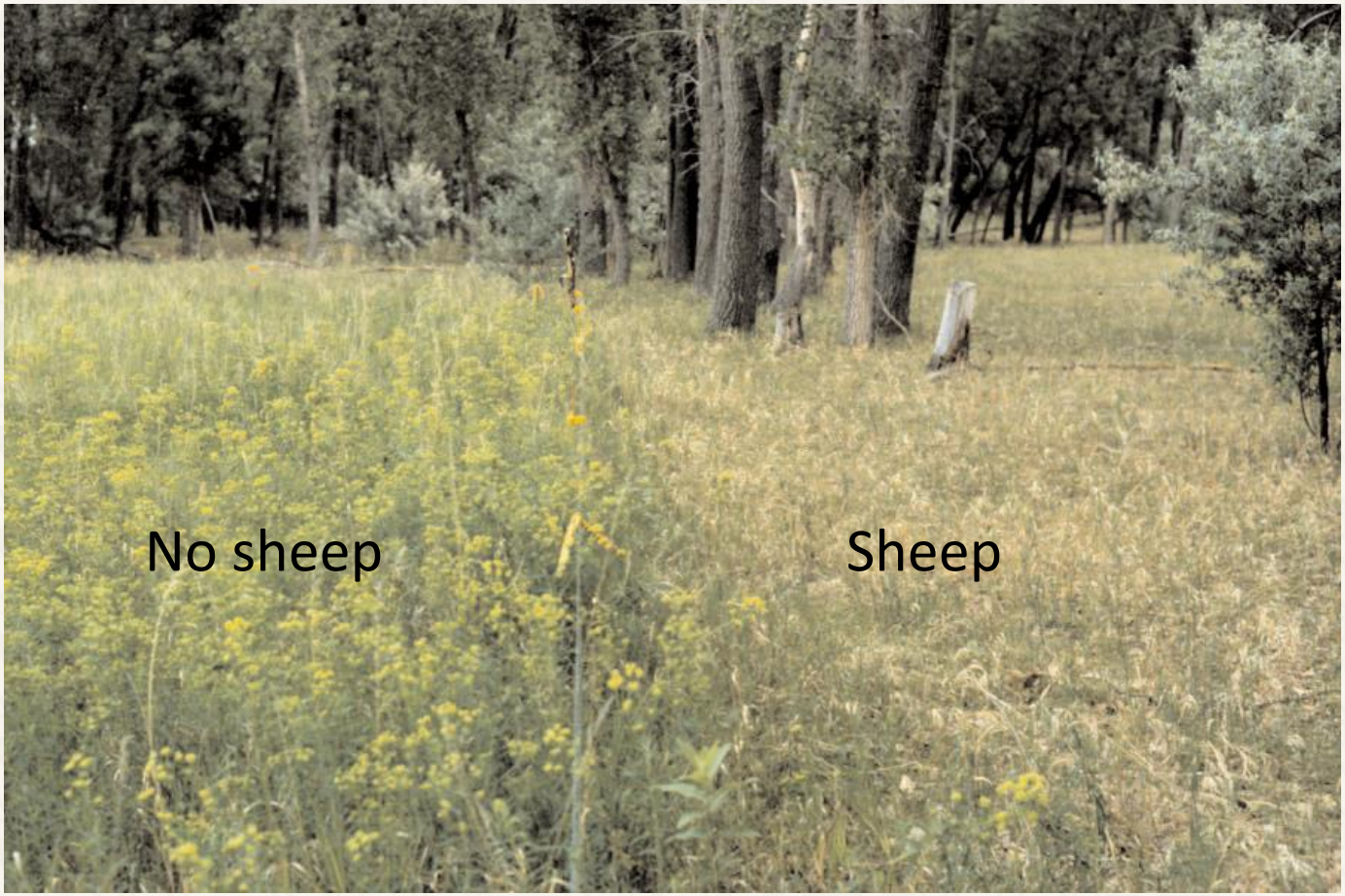
EXTENSION

Estrogen content of pastures

Phytoestrogens

- The estrogen content of legumes can interfere with reproduction.
- Ewes and does should be kept off pastures containing high amounts of legumes 2 to 4 weeks before breeding

Leafy Spurge Control



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Nitrates and Prussic Acid

Nitrate poisoning

- Sorghums, millets, corn, oats, rye, and pigweed
- When NO_3 exceeds 1% in plant tissue – occurs when tissue is stressed (moisture) and high levels of nitrogen are present
- Don't graze during stress periods
- Don't graze too short
- Dilute with other forages, grain
- Does not leach out of hay

Prussic Acid poisoining

- Occurs primarily in sorghum family (johnsongrass, sorghum, sorghum-sudan)
- When HCN levels exceed 500 ppm on DM basis (200 ppm on wet basis)
- Occurs when plant tissue is stressed, primarily after frost or drought in a high N environment.
- Avoid grazing for one week after hard frost or during severe drought.

Hay can be fed due to volatilization of CN compounds.

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Poisonous plants

- Unexplained Deaths
- Relates to quantity of material consumed, portion and age of plant eaten, the season of the year, age and size of the animal, and other factors.
- Signs of plant poisoning can be varied and mimic other health problems.

http://www.sheepandgoat.com/poison.html
http://www.spokanecounty.org/weedboard/pdf/2004ToxicPlants.pdf
http://www.ansci.cornell.edu/plants/goatlist.html

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Poisonous Plants

Lily-of-the-valley

Yew

Larkspur

Azaleas

Wild cherry

EXTENSION

Grass Tetany

hypomagnesemia, magnesium deficiency, “grass staggers”

- Can be a problem in sheep and, to a lesser extent goats grazing lush, rapidly growing forage.
- Usually occurs during the early spring on pastures that are well fertilized with nitrogen and potassium.
- A combination of elevated N and P levels in the forage leads to a reduced absorption in the GI tract of the animal.
- Goats and sheep grazing lush cereal grains (e.g. wheat, rye) particularly in early lactation or late gestation are predisposed to this condition.

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Frothy Bloat

- Less common in goats than sheep and cattle
- <u>Predisposing factors</u>:
  - Recent turnout to legume or wet grass pastures.
  - Feeding of garden greens to animals on a dry hay diet.
  - Gleaning of grain fields.
- <u>Prevention</u>
  - Limit legumes to less than 50% of pasture mix
  - Gradually introduce animals to greenchop or fresh legumes.
  - Feed dry, stemmy hay for 1 to 2 hours before allowing access to legume pasture.
  - Graze safer legumes
  - Include poloxalene in the feed or mineral.
  - Include ionophore in mineral supplement.

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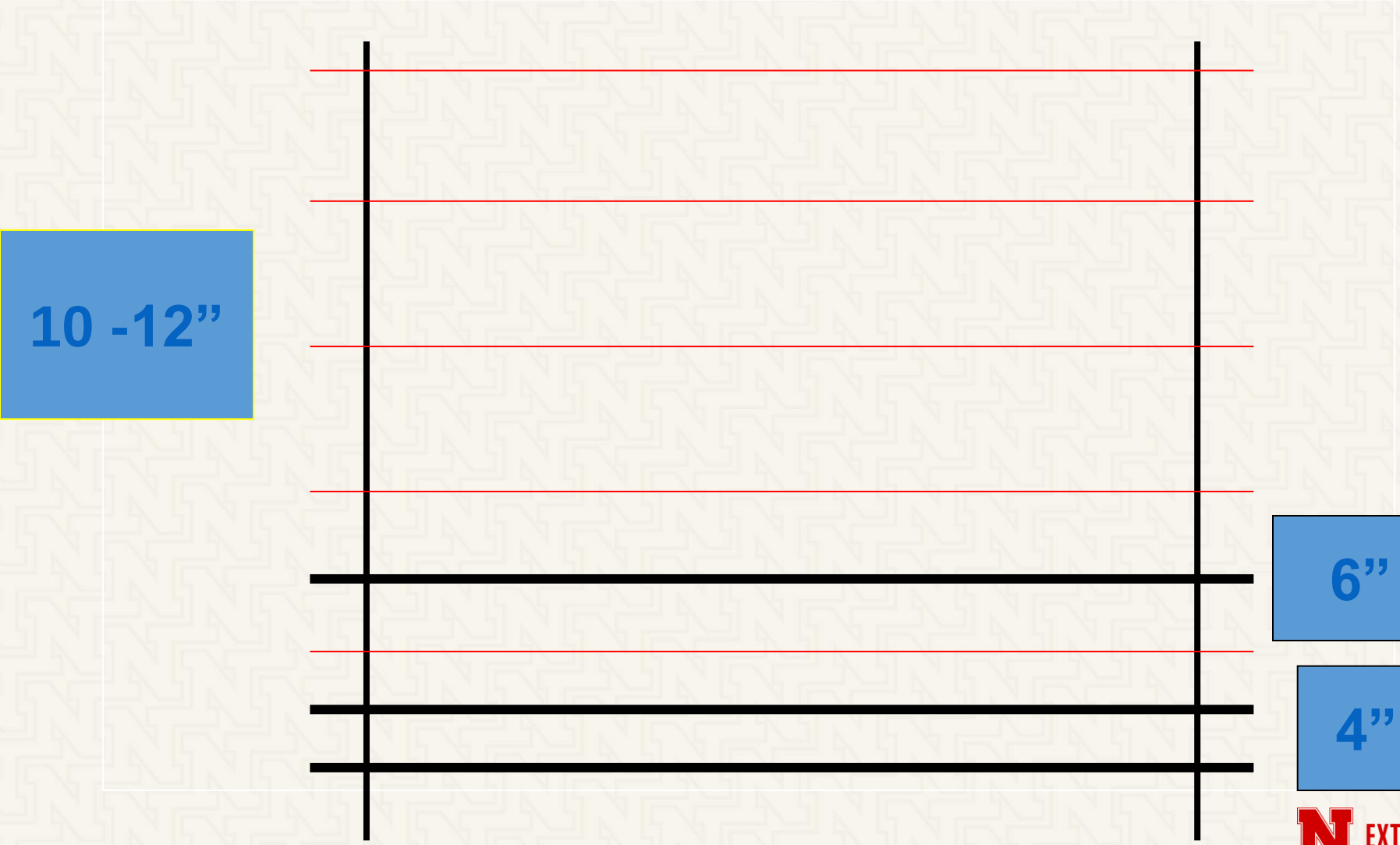
Fencing – What we do

- Perimeter fence
  - High tensile electrical wire
    - at least 42 (52) inches tall
      - 6 to 8 inches near ground
      - 8 to 12 inches at top strands
      - from ground: 6, 14, 22, 32, 42, (52)
      - at least 4,000 volts; train goats **first**

Pastures for Goats & Sheep in a Cow Calf State



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Predators

Accounted for 37.3% of losses in 2005

- Management
  - Start with a good fence
  - Lamb and kid where predator risk is low
  - Night penning
- Livestock Guardians
  - 45% of U.S. sheep farms employ livestock guardians.
- Lethal control
  - Hunting, trapping, and denning
  - Livestock production collars, M-44 injector

EXTENSION

Gastro-Intestinal Parasites

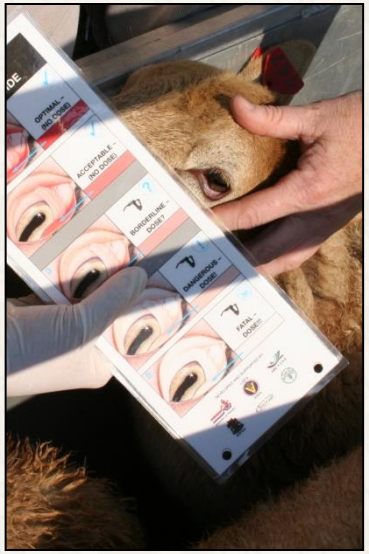
Stomach Worms

- *Haemonchus contortus****
- *Ostertagia*
- *Trichostrongylus*
- *Nemotodirus*

Coccidia

- *Eimera* spp.

- Good pasture and animal management
- Selective deworming using the FAMACHA© system
- Fecal egg counts to monitor pasture contamination and measure drug resistance.



Weaning

- Lambs and kids can be weaned as early as 30 days and as late as 6 months or more.
- There are numerous advantages and disadvantages to early and late weaning.

Early weaning (2-3 mos.)

- Save best pasture for lambs and kids
- Can market cull ewes/does earlier
- Focus parasite control on young stock

Late weaning (> 3-6 mos.)

- More natural
- Less stressful to lambs/kids
- Less problems with mastitis
- Ewes/does contaminate pastures with worm eggs
- Need to castrate males

N EXTENSION

Shade

- Do sheep and goats need shelter or shade when they are grazing?
- When given a choice, sheep/goats will choose shelter during inclement weather.
- Providing shelter/shade can be one of the most challenging aspects of designing a grazing system.

Use of Coccidiostats on Pasture

- Slow down development of coccidia
- Must be fed before risk period
- Fed daily in small amounts

- Ionophores
  do not allow any equine to ingest
  - Monensin (Rumensin®)
    FDA-approved for goats
  - Lasalocid (Bovatec®)
    FDA-approved for sheep
- Decoquinate (Deccox®)
  FDA-approved for goats and sheep

EXTENSION

Mineral supplementation

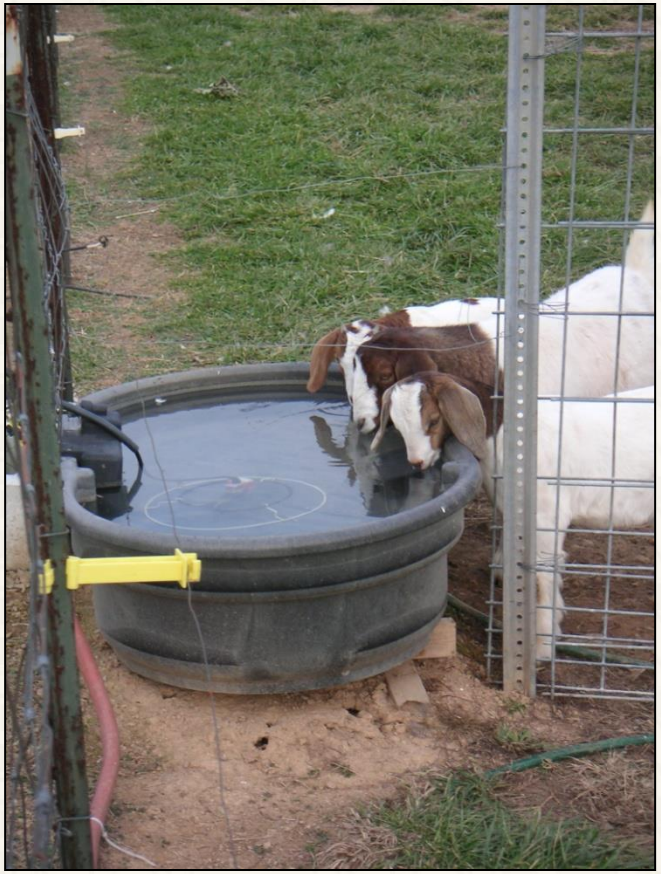
- Provide free choice minerals to grazing livestock.
  - Feed sheep mineral to sheep
  - Feed goat mineral to goats
  - Feed sheep mineral to co-mingled sheep/goats
- Consider feeding protein blocks or tubs if lambs/kids are grazing poor quality pasture.
- Consider feeing mineral containing a coccidiostat to lambs/kids, but not dry ewes/does.

EXTENSION

Water

The most critical nutrient

- Consumption is 1 to 1.5 gal. per 4 lbs. of dry matter consumed.
- Rain, dew, or snow will influence water intake.
- Environmental temperature greatly affects water intake. Ideal temperature is 45-55°F.
  - Locate during shade in summer
  - Use heaters in winter
- Sheep/goats will not consume poor quality water.



Sheep/goats should have access to water at all times.

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Creep feeding

To increase rate of gain of nursing lambs/kids

- Dry feed
  - 14-18% CP
  - Ca:P ratio of at least 2:1
  - Inclusion of ammonium chloride or ammonium sulfate to prevent UC.
  - Fresh and palatable
  - Minimal dust/fine particles
  - Pelleted feeds prevent sorting (< ¼ in. diameter)
  - Vaccinate for overeating disease

Is creep feeding economical?

- Creep grazing
  - High quality forage

EXTENSION

Supplementing lambs/kids on pasture

Why?

- Increase rate-of-gain of weaned lambs/kids
- Increase parasite resistance (esp. protein supplementation)
- Increase carrying capacity of pasture
- Makes animals tamer
- Allows closer monitoring of animal health

- High grain levels (>1% of BW) may interfere with fiber digestion.
- By-product feeds (soybean hulls, corn gluten feed, wheat middlings, brewers grain distillers grain, and rice bran) do not negatively impact forage digestion.

Is it economical?

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Contact information

randy.saner@unl.edu

308-532-2683

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