

Today's format

- If you haven't already, **please mute** your microphones.
- Speakers will present for 30-40 minutes
- Panelists will join the discussion at the end
- Please ask questions through the **chat** function (located at the lower part of your screen).
- Although our “end time” is posted for 9:30 a.m., participants are welcome to remain longer if they want to discuss the topic further.

Speaker



Jeff Davidson

KCARE Watershed
Specialist for the Flint Hills

Panelists

Dale Helwig, Cherokee County Extension Agent;

Jody Holthaus, Meadowlark Extension District Agent;

Keith Harmoney, Agricultural Research Center, Hays;

Jaymelynn Farney, Southeast Research and Extension Center



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Extending the Grazing Season

Using Cover Crops to fill in Forage Gaps

*Jeff Davidson,
KCARE Flint Hills Watershed specialist*



Agenda for Today

- **What is the “perfect” cover crop**
- Incorporating cover crops for grazing
- Grazing plan for cover crops
- Crop Residue
- Last Thoughts

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The “perfect” cover crop

What are producers looking for?

- Highly diverse
- Deep, productive root system
- Utilizes available moisture efficiently
- Forms mycorrhizal relationship
- Doesn't require fertilizer
- Reseeds and/or regrows easily
- Drought resistant
- Benefits wildlife & pollinators
- Safe for grazing

What meets these requirements?



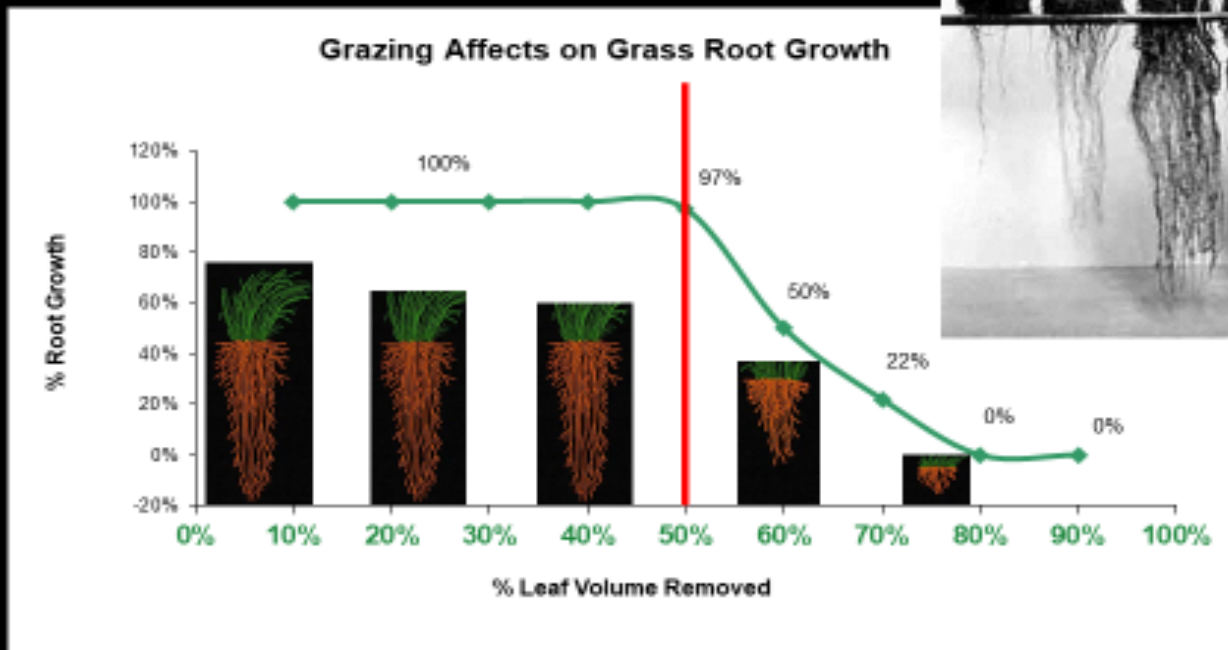
The “perfect” cover crop?



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Root Growth



Take Half, Leave Half

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

Take Home

- Focus on forage growth, proper leaf removal, and adequate recovery which directly impacts the nutrient cycle, water cycle, and energy flow.



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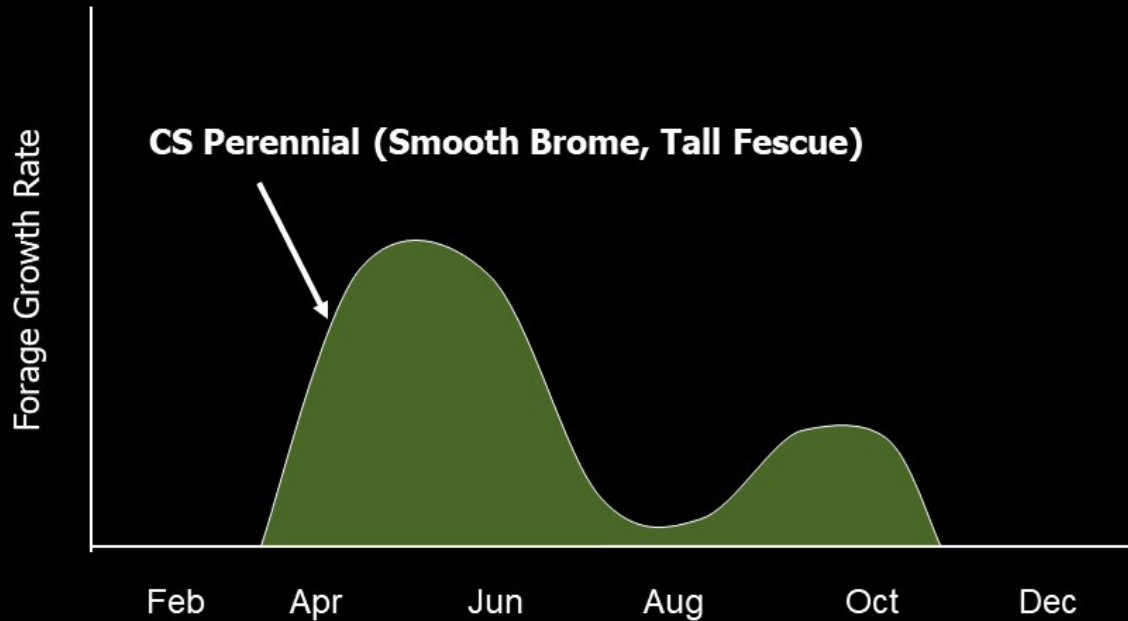
What cover crop is needed?

- What is the current forage base?
- Are there production or nutritional gaps in the current system?
- Is there available land to incorporate additional forages?



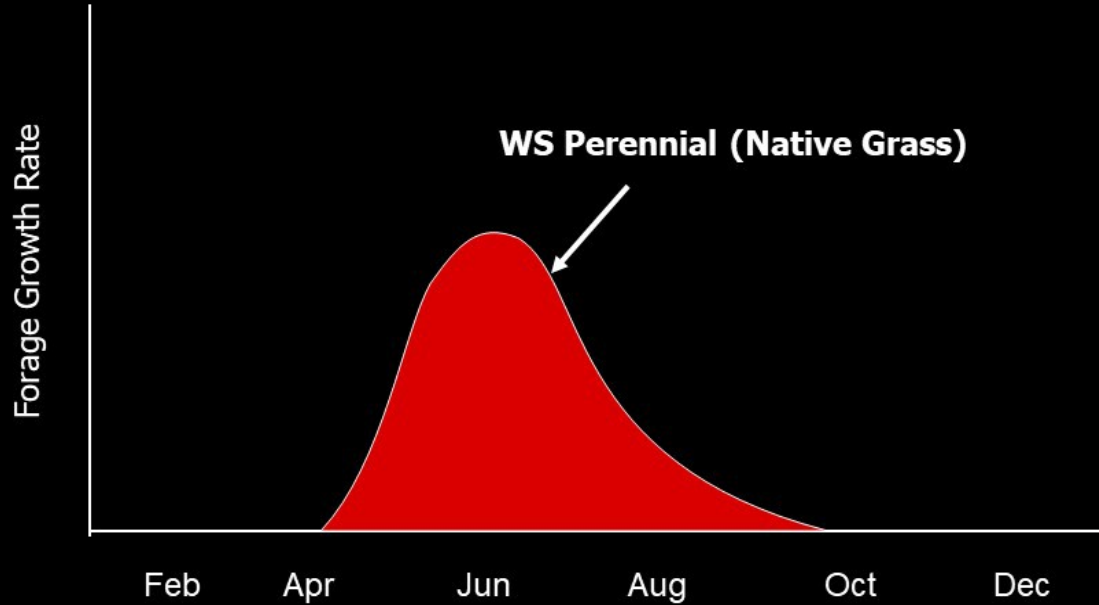
GROWTH CURVE

- What is the current forage base?



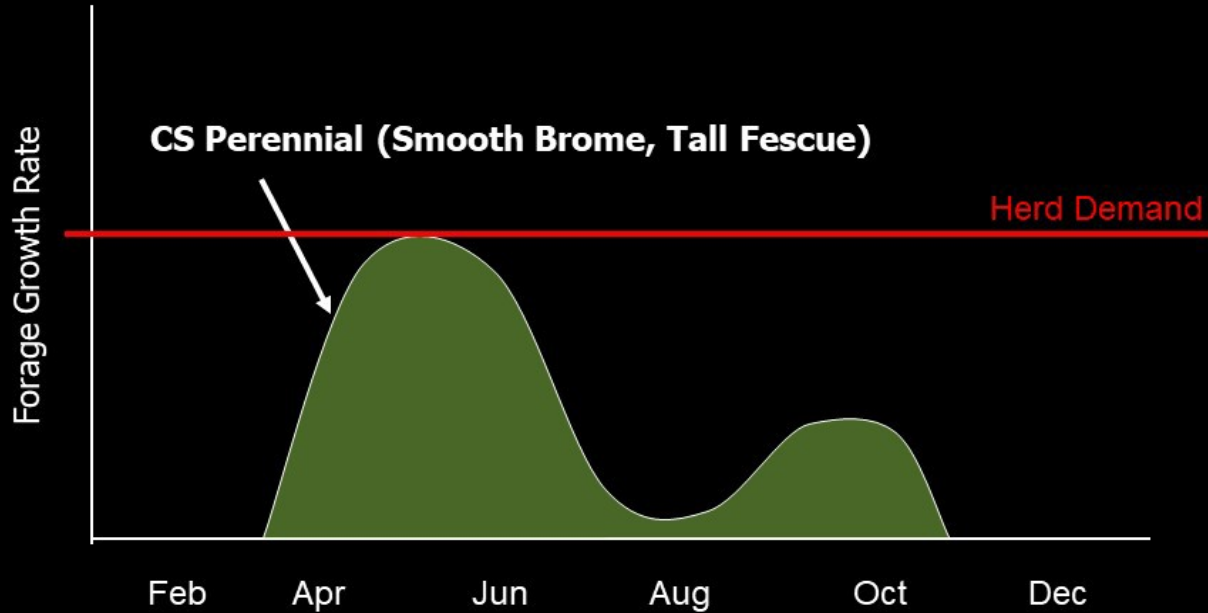
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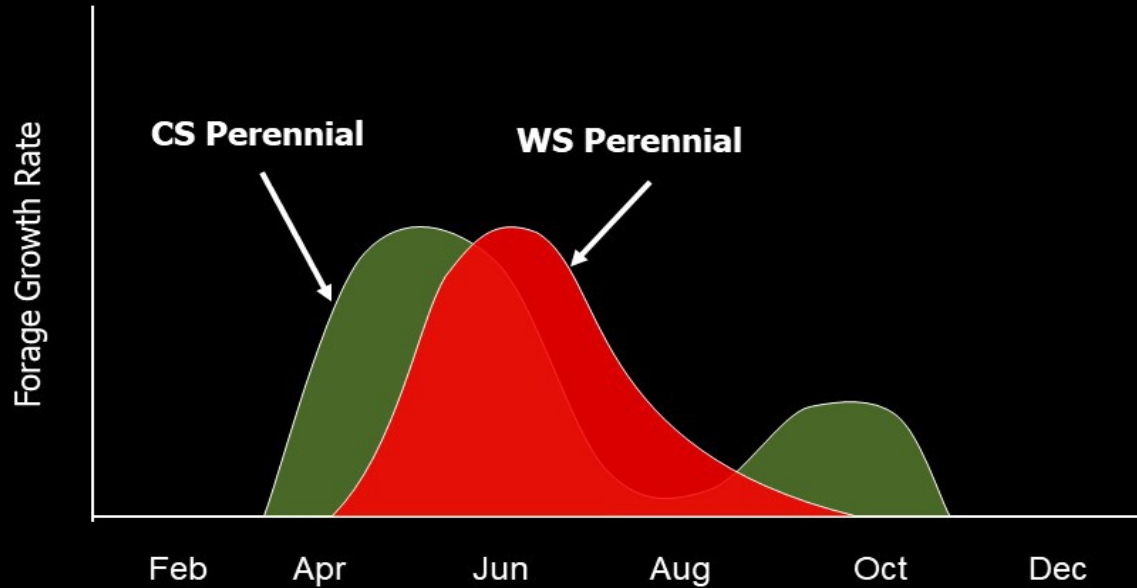
MANAGEMENT CHALLENGES

- What is the current forage base?



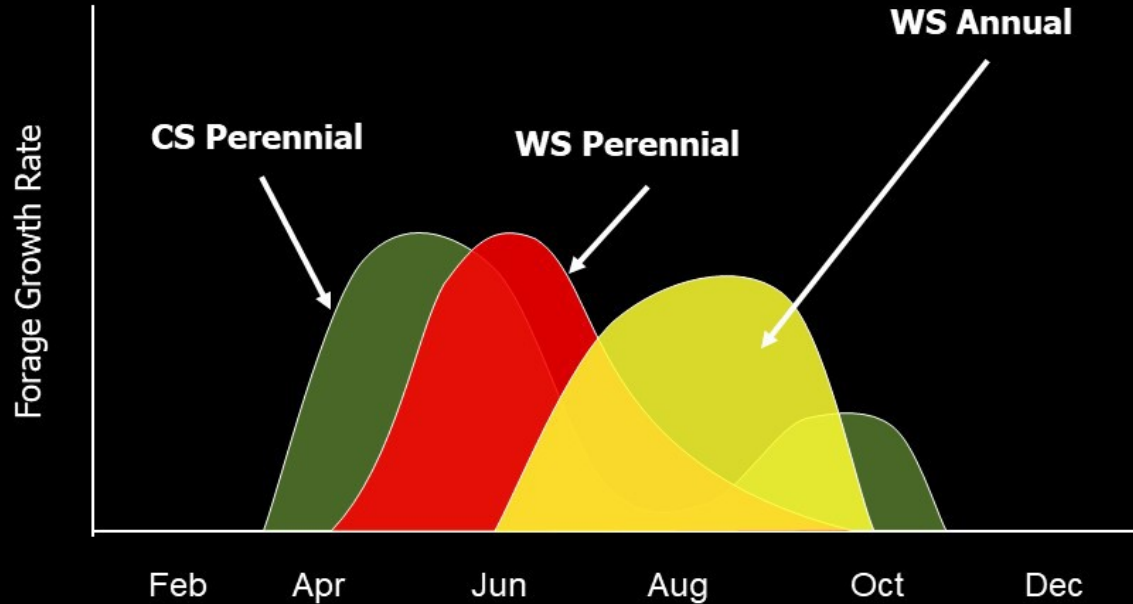
IDENTIFYING OPPORTUNITIES

- Common Forage Base – East/Central Kansas



FILLING FORAGE GAPS

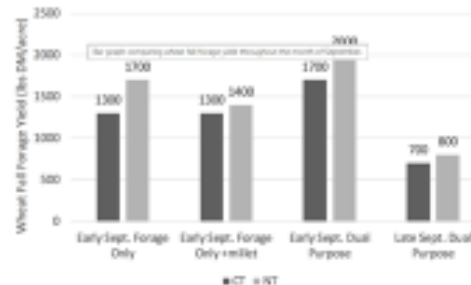
- Rotating to cropland – Warm Season Annual



CRABGRASS – RYE/WHEAT

Crabgrass is warm-season annual

- Germinates 58°F
- Shallow seeding 2-5 lbs live seed/acre
- Can re-seed
 - Remove 2-3 weeks prior to first frost
- Slight disking in fall or spring
- 25 lbs DM/lb of Nnitrogen applied
- Stocking rate 800 to 1200 lbs/acre fertility and water



<https://extension.ksstate.edu/sect-aherita/management/crabgrass-in-a-continuous-grazeout-wheat-system.html>

Rye/wheat is cool-season annual

- Terminate crabgrass ~early August
 - Tillage most common but in no-till system hay
 - No-till may be better as want to have 100% ground cover and roots from crabgrass
- Plant September
- Terminate by hay/grazeout in April/May to allow crabgrass to see the sunlight

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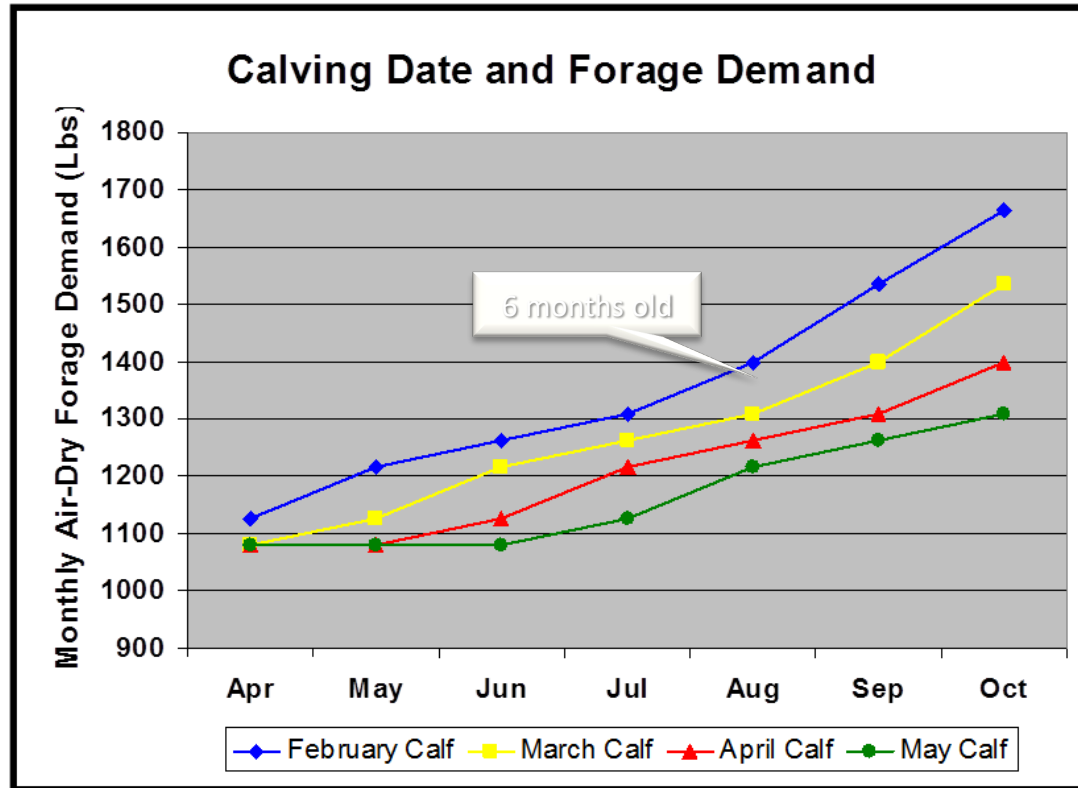
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Stocking Rates

- Livestock Inventory – Calving Date (1200 lb cow)



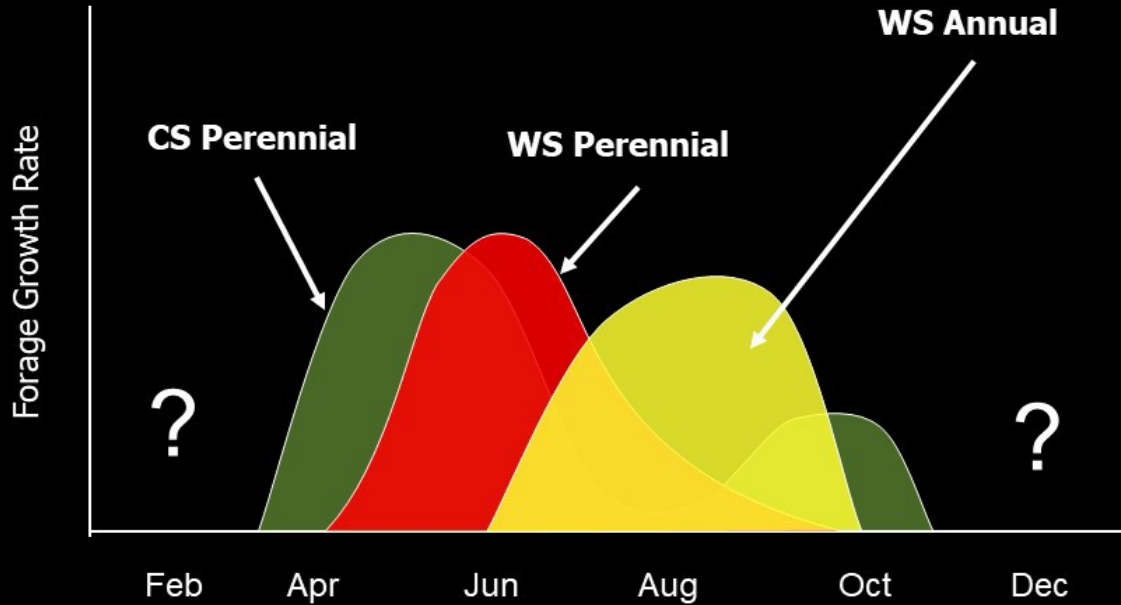
Cover Crops for Grazing

- Maintain forage quality for livestock
- Allow rest for perennial forages
- Extend the grazing season



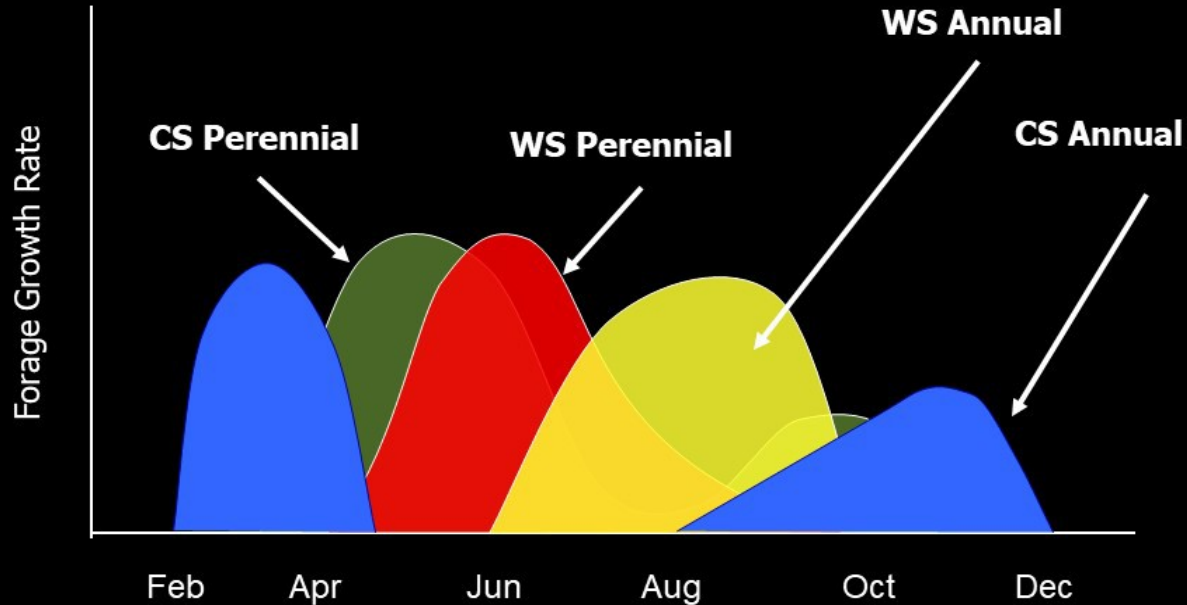
GRAZING COVER CROPS

- What about November-February?



GRAZING COVER CROPS

- Year-Round Forage Balance Potential



Forage or Supplement ?

SHORT TERM GRAZING

Allow cows a couple of hours/d to graze high protein, high energy forage at least 3x/week

- This is also known as limit grazing pasture

Oklahoma State University study

- Allowed cows to graze wheat pasture for 4 hours 3x/week (Fall-calving herd)
- Rest of the time cows were on native hay
- From calving to weaning cows on this system performed exceptional

Same can be done with cover crops and stalks

Forage Production Options

- Summer Grazing (graze at 45-60 days after planting)
 - Warm season mix planted in May (replaces cash crop)
 - Warm season mix planted directly after wheat
- Fall Grazing (graze at 60-75 days after planting)
 - Warm and cool season mix after wheat harvest: plant August 1 to 15
 - Cool season mix after short season corn or corn silage planted by September 1 to 15.
- Spring Grazing:
 - Early spring: cereal rye or triticale planted by Nov. 1 previous fall
 - Mid-spring: winter wheat seeded previous fall

COVER CROP

TOXICITY POTENTIAL

FORAGE CROPS

GRAZING MANAGEMENT: TOXIC PLANTS

Forage Crop Characteristics and Toxicities

Plant	C*	G	W*	S*	TDN	CP'	Toxicities	livestock affected
Sorghum - Sudan grass	G			W	56	6-8	Prussic acid	All cattle and sheep
Sudan grass	G	A	M	W	70	17	Minimal chance of prussic acid poisoning	All cattle and sheep
Teff	G	A	M	W	55-64	9-14		
Triticale ¹¹	G	A	H	C	52-54	8-10	Grass tetany, bloat	All cattle, lactating cows
Wheat ¹²	G	A	M	C	55-60	8-10	Grass tetany, bloat	All cattle, lactating cows

MF3244 KSU Publication – April 2018



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Take Home

- Determine the surpluses and deficits in the current forage base (quantity and quality).
- Determine growth gaps in the cash crop production cycle that would allow a cover crop to be grown.
- Plant species to meet current needs that will grow in identified growth windows. In some instances, current cropping systems could be changed to allow a window of opportunity.

Take Home

- Be aware of potential toxicity issues with the forage types you choose to plant and find ways to minimize the issue.



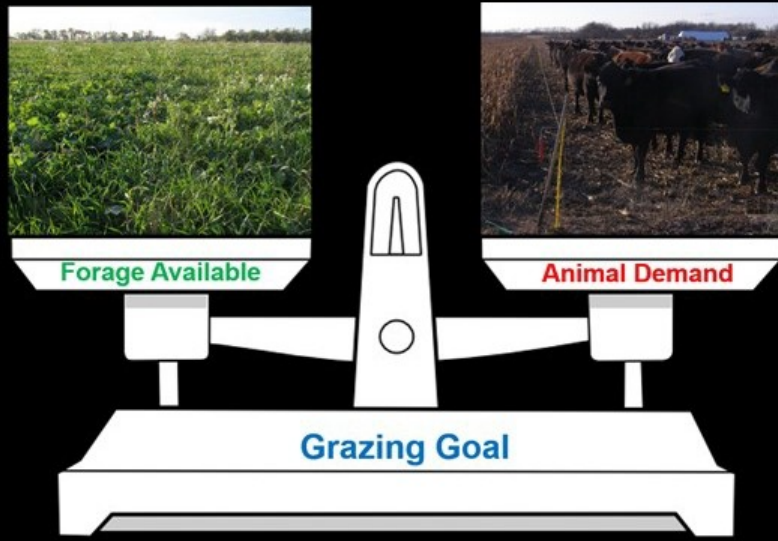
Agenda for today

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STOCKING RATE CALCULATIONS FORAGE/ ANIMAL BALANCE

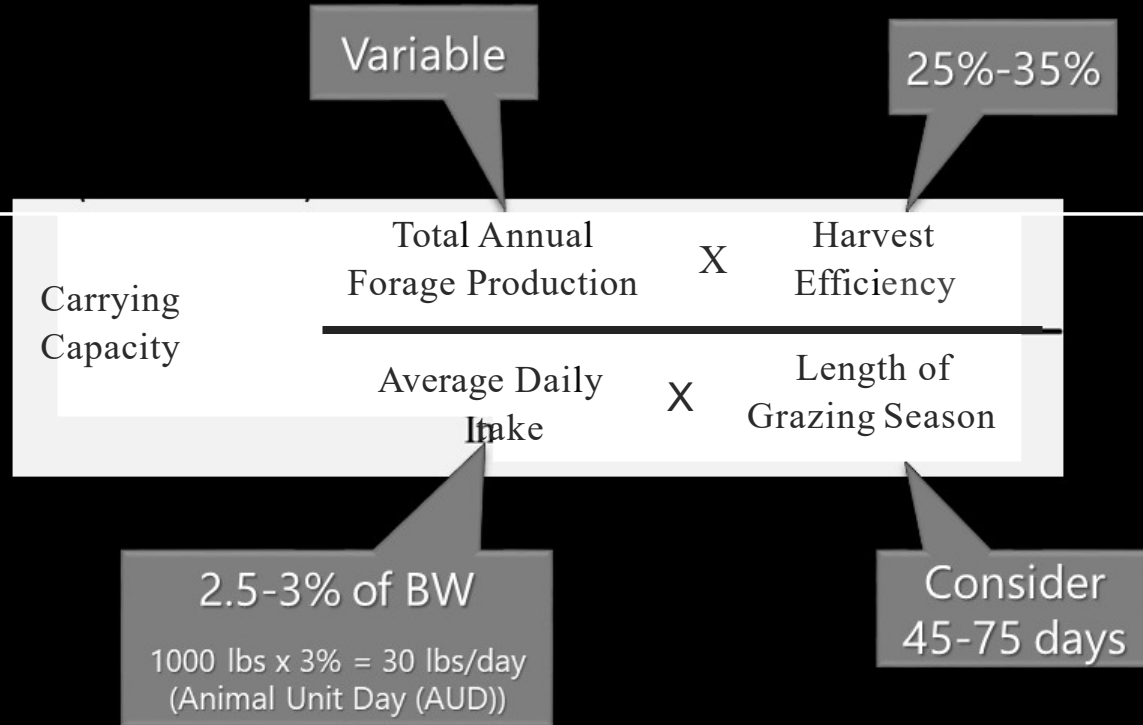
$$\begin{array}{r}
 \text{Carrying Capacity} \\
 \text{Proper Stocking Rate} \\
 \text{(Number of Head)}
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 =
 \frac{
 \begin{array}{r}
 \text{Total Annual} \\
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 \text{Average Daily} \\
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 \times
 \begin{array}{r}
 \text{Length of} \\
 \text{Grazing Season}
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 }$$



Substitute
Number of
Head to solve
for Number of
Days



STOCKING RATE CALCULATIONS FORAGE/ANIMAL BALANCE



Stocking Rate

Forage Inventory - Harvest Efficiency

Carrying
Capacity

Total Annual
Forage Production

X

Harvest
Efficiency

Average Daily
Intake

X

Length of
Grazing Season

Total Forage
Production

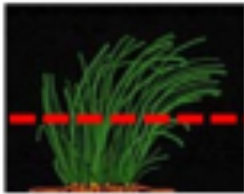
25% " Available " for Grazing Animal

- (Available Forage Production)

25% Environmental Loss

- Trampling, Grazing Selection, Manure/ Urine Spots, Insects, etc.

50% Remains for Grass Plant Health/Vigor



Forage Production in Native Range

Rangeland Type	Low Density lb/ac/inch	Medium Density lb/ac/inch	High Density lb/ac/inch
Tallgrass	120-160	160-230	230-300
Mixed grass	70-120	120-160	160-230
Shortgrass	30-40	40-80	80-120

Forage Production Estimates

- Fall seeded oats: 100- 120 lbs/in of height
- Fall seeded grass/brassica blend: 180-220 lbs/in of height
- Fall seeded rye/wheat: 275-350 lbs/in of height
- Summer grazing blend (forage sorghum, sudangrass, etc.): 1,000-1,200 lbs/foot of height (85-100 lbs/in of height)
- ***Good Stand? Or Fair, or Poor?***

GRAZING COVER CROPS

- What's the Goal?

Is it a **cover** crop that will be grazed?

OR

Is it a **grazing** crop that will provide cover?



HARVEST EFFICIENCY:

What is the goal?



USDA - NRCS Photo



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HARVEST EFFICIENCY:

Portable Electric Fencing

- Allocate forage over time to reduce waste.

Water Development

- Keep travel distances to a minimum.

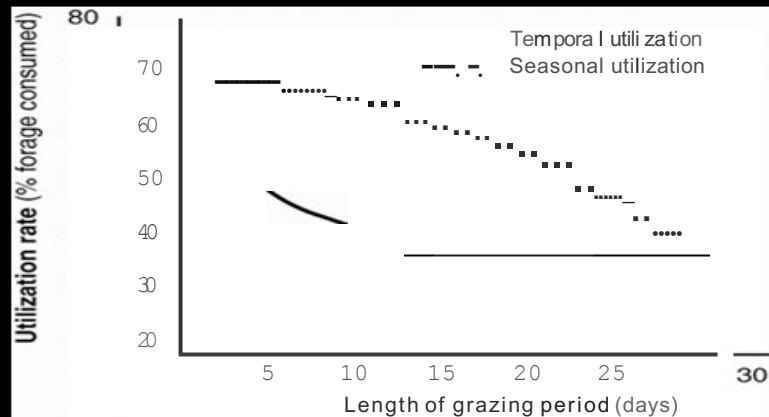
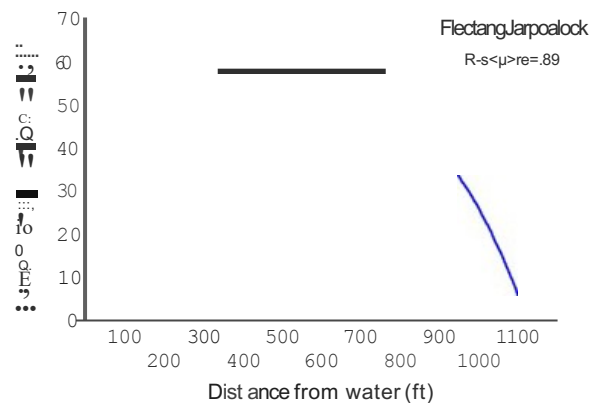


Figure 1.

Impact of distance from water on temporal utilization rate in rectangular 10 acre paddocks.



Take Home

- Forage production using annual forages can be highly variable. Have perennial pasture or stored feed available as a backup plan.
- Determine a cover goal (harvest efficiency) before grazing and stick to the plan.
- Use basic forage estimates to provide a starting point for grazing expectations. Keep records each year, and fine tune future plans.

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Beef.unl.edu corn stalk grazing
calculator



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ARE STALKS A VIABLE FEED OPTION FOR CATTLE?

Low cost feed option (\$10/ac)

CP: 5-8%

TDN: 40-70%

Quality is higher in dryland corn than irrigated

Requirements for a 1400 lb dry cow in last trimester

- CP: 6.9 – 8.9%
- TDN: 49.1-56.6%

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**Cows prefer grain, husks, leaves in
that order
K-State Forage Facts Grazing corn Residue**



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KANSAS STATISTICS

5.30 million acres – corn for all purposes

5.15 million acres – corn for grain

State carrying capacity for cows assuming:

- 1400 lb dry cow
- Utilizes 50% of stalks
- Average corn yield in KS 142 bu/ac (KSCC, 2016)
- Graze for 90 d
- Stocking rate 1 cow/3 ac

1,716,666 cow ~ 1.7 million cows

1.6 million cows in KS → 6.4 million cows+calves

(NASS, 2017)

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Midwest Cover Crops Field Guide (book)





K-State “Cover Crop Species and Mixtures”

S 115 Forage Facts Notebook

MF 2086 Managing KS Grazinglands for Multiple Benefits



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**MF3443 Managing Spring Planted Cover Crops for Livestock
Grazing under Dryland Conditions in the High Plains Region - KSRE
Bookstore**

[https://www.drylandag.org/uploads/1/1/5/7/11576673/carrying
_capacity_calculator.xlsx](https://www.drylandag.org/uploads/1/1/5/7/11576673/carrying_capacity_calculator.xlsx)



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Spread out attractants – water, feed, mineral, shade shelter



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One ounce of grass

1 oz = 1 bite for a cow

1 oz per sq. yd adds 302.5 lb per acre

193,000 lbs per section

\$\$ MILLIONS \$\$ to state of Kansas

