

What really determines profitability in: 1) ranching



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What really determines profitability in: 2) grass farming



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What really determines profitability in: 3) solar energy conversion to meat, milk, or fiber



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Tom Lasater once said....
**The key to profitable ranching is
keeping it simple....**

***... the challenge to profitable
ranching is keeping it simple***



Only four ingredients are necessary for making meat, milk, and fiber

- CO_2
- *Solar energy*
- *Water*
- *Soil minerals*



Grazing management should be about balancing ecosystem processes, not manipulating inputs

- Solar energy flow
- Water cycle
- Mineral cycle
- Biodiversity



Focus on what you can control



What factors truly impact profit???

Scale of operation?

Weaning weights ?

Calf price ?

Labor Costs ?

Feed Costs ?

Overheads ?

Weaning Percent ?

Operating Costs ?

Cow or ewe size ?

Enterprise selection?



Summary of SPA record herds

<u>Dependent Variable</u>	<u>R²</u>
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Feed Cost	.567
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Depreciation Cost	.086
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Operating Cost	.049
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Calf weight	.046
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Capital charge	.024
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Calf price	.027
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Weaning percentage	.017
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<u>Herd size</u>	<u>.007</u>
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Total	.823
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-There are 8 financial measures capable of explaining over 82% of farm-to-farm variation in RLM

-Cost factors were far more influential in driving RLM than production, reproduction, or producer-controlled marketing factors

-In the financial prediction equation nearly **57% of herd-to-herd variation in profit can be explained by feed cost**

Source: Dr. Allen Miller, U of IL, Beef Extension Specialist, 2008



Still the same old story: COST MATTERS MOST!

■ **Table 2. UCOP measurements for Low, Medium and High Profit herds in WY & NE (Mount, 2010)**

■ Low 15% Average Top 15%

■ Lbs weaned/cow exposed	507	499	402
■ Income/breeding female	\$ 515.83	\$ 631.72	\$ 538.50
■ Cost/breeding female	\$ 682.68	\$ 597.27	\$ 399.06
■ Total Feed cost / cow	\$ 415.74	\$ 323.32	\$ 233.16
■ Hay cost / cow	\$ 257.81	\$ 104.28	\$ 40.17
■ Net /breeding female	\$-166.86	\$ 52.46	\$ 139.44



Food for thought: Where is the profit in a calf?

- 400 lbs?
- 500 lbs?
- 600 lbs?
- 700 lbs?

Almost any cow in almost any circumstance can give you a 400-lb calf



.... Unless there is human error



Profit = Income - Costs

- You can increase income by:
 - Increasing units of production
 - Receiving higher price per unit
 - Adding enterprises
- OR reduce costs by:
 - Reducing unit cost of production

It is critical you know your unit cost of production !



Profit = Income - Costs

- You can increase income by:
 - Increasing units of production
 - Receiving higher price per unit
 - Adding enterprises
- Or by reducing costs
 - Operating (variable)
 - Overhead (fixed ??)



What are operating costs ?

- Costs that change as production level changes
 - Livestock purchase
 - Feed
 - Vet
 - Fuel
 - Machine operating, repair, & maintenance
 - Trucking
 - Day labor
 - Interest on operating loan
 - Etc.



Gross margin reminder

	Value of the product	\$ 1000
-	Operating cost to produce product	- \$ 700
	<u>= Gross margin</u>	<u>\$ 300</u>

Objective is to have gross margin > 50%

Until gross margin is >50%, we need to focus on cost reduction, not increased production



What I learned from Ranching for Profit: Three Keys for Profitability

- Improve gross margin
 - Work with nature, not against nature
 - Every critter on the place is a ranch employee



Grazing is almost always lower cost per AUD compared to stored feed

■ Grazing

- Livestock do the harvesting
- Effectively managed grazing will outyield hay
- Grazing infrastructure is much cheaper than equipment ownership
- Efficient nutrient cycling
- No manure to haul

■ Hay or Silage

- Machinery does the harvesting – you cannot control cost of fuel, equipment, repairs & maintenance
- Every bite of feed has to be delivered to livestock
- Hauling feed out can be challenging in poor weather
- Poor nutrient cycling

What I learned from Ranching for Profit: Three Keys for Profitability

- Improve gross margin
 - Work with nature, not against nature
 - Every critter on the place is a ranch employee
- Reduce overheads
 - Overcapitalization in equipment & facilities is a ranch killer
 - Low labor efficiency is common



What are overhead costs ?

- Costs incurred whether you produce anything or not
 - Land ownership
 - Salaries & full-time labor
 - Equipment depreciation
 - Facility depreciation
 - Utilities
 - Insurance
 - Taxes



Reduce Overheads

It takes animal product to pay for equipment

How many cows does it take to pay for a swather, a tractor, a baler, a rake, etc?



What I learned from Ranching for Profit: Three Keys for Profitability

- Improve gross margin
 - Work with nature, not against nature
 - Every critter on the place is a ranch employee
- Reduce overheads
 - Overcapitalization in equipment & facilities is a ranch killer
 - Low labor efficiency is common
- Accelerate turnover rate
 - Don't get married to your cows
 - Every day you didn't sell something, you bought it



Livestock enterprises with quick turnaround times accelerate cash flow

- Pasture poultry
- Feeder lambs
- Short-season yearlings
- Fattening cull cows



What I learned from Ranching for Profit: Three Keys for Profitability

- Improve gross margin
- Reduce overheads
- Accelerate turnover rate

None of these relate to individual animal performance!



Keys to Profitability:

According to Burke Teichert (Deseret)

- Carrying Capacity (*return/acre not return/head*)
- Grazed feed vs. Fed feed (*stockpile vs. hay*)
- Cows/person (*AU/FTE – Deseret 800-1200*)
- Increase gross margin (*>50%*)
- Reduce overheads (*<33% overhead ratio*)
- Debt : Equity ratio (*depends on your risk aversion*)
- Scale of Operation
 - There really are efficiencies of scale, up to a point!
 - *Small operations can be profitable if top 6 are right!*

None of these relate to individual animal performance!

Understanding Animal Units (AU) and Animal Unit Days (AUD)

- The standard animal unit is a 1000-lb cow at moderate production level
- An AUD is the amount of forage that 1000-lb animal will eat in a day
- $1000 \text{ lbs} \times 2.6\% \text{ bodyweight intake} = 26 \text{ lbs}$
- An AUD is simply 26 lbs of dry matter forage



Understanding Animal Units (AU) and Animal Unit Days (AUD)

- We can take any species or class of livestock and express those animals as AU
- $\text{Total herd or flock weight} / 1000 \text{ lbs} = \text{AU in the herd}$



Understanding Animal Units Days/Acre (AUD/A)

- We express pasture yield as how many AUD/acre we have harvested
- Total herd or flock weight/1000 lbs = AU in the herd
- $$\frac{\text{AU in herd} \times \text{days on pasture}}{\text{acres in pasture}} = \text{AUD/A}$$



Basic business principles apply in farming and ranching

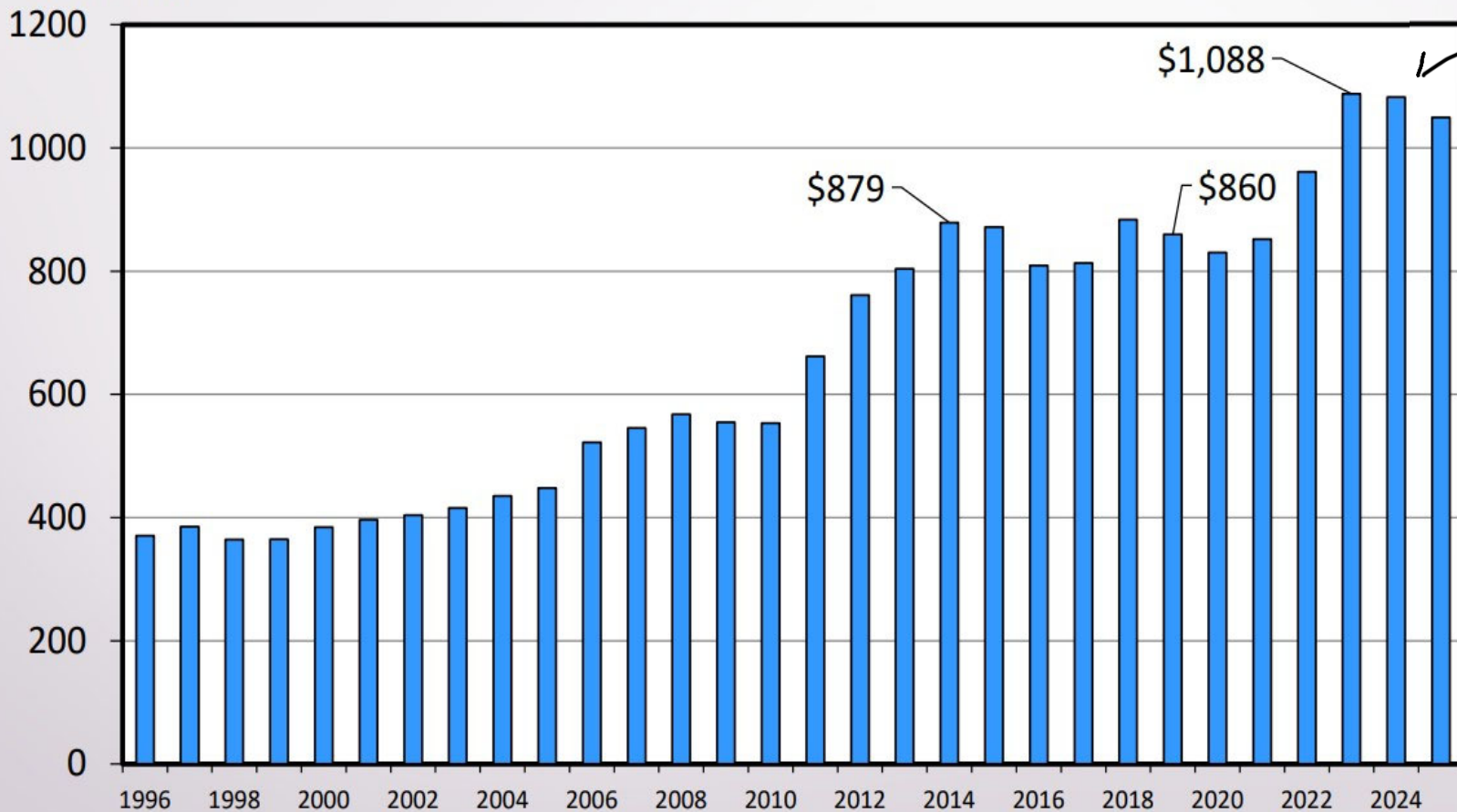
- Gross Margin Analysis
 - Gross Margin (GM) is the difference between value of your product and operating costs to produce that product
 - GM can also be thought of as Return to Overheads

Cost for cow-calf operation has steadily increased here in the 21st century!

ESTIMATED AVERAGE COW CALF COSTS

Total Cash Cost Plus Pasture Rent, Annual

\$ Per Cow



Annual costs had been predicted to drop in 2024

Costs actually increased to \$1143/cow!

Data Source: USDA & LMIC, Compiled by LMIC

Livestock Marketing Information Center

09/19/23



Are calves the only product of a cow-calf enterprise?

- Revenue streams in a cow-calf enterprise raising its own replacements
 - Calves
 - not every cow has a calf, so each cow gets a share of the calf crop based on overall weaning percentage
 - Cull cow sales
 - Some cows get culled every year, so each cow in the herd gets a share of cull cow sales
 - Cull bull sales
 - Bulls are periodically replaced, so each cow gets a share of cull bull sales
 - Cull replacement sales
 - Not all replacement heifers get bred and move into the herd, so all cows get a share of cull replacement sales

Calculating annual revenue per cow by revenue source

- Calves sell for \$1800/hd x 88% of cows exposed to bull bring live calf to weaning pen = \$1,584 calf income per cow in Jan 1 inventory
- 15% of cows culled each year X \$1200 cull value/cow = \$180 per cow in Jan 1 inventory
- 18% replacement heifer rate X 10% replacements open X \$2000/hd value open replacement = \$36 per cow in Jan 1 inventory
- (\$1500 bull salvage value ÷ years of service) ÷ number of cows serviced/bull =
($\$1500/3$) ÷ 30 = \$17

$\$1584 + \$180 + \$36 + \$17 = \$1,817/$ cow in Jan 1 inventory

Calculating revenue per cow the easier way

- Total cattle revenue $\div$ Jan 1 cow inventory
- eg. $\$182,000 \div 100$ cows present on Jan 1
= $\$1,820/\text{cow}$

Calculating AUDs consumed by cow-calf pair & support staff

- Because most cows don't weigh 1000 lbs, we need to determine how many AUDs are consumed annually by the cow, the calf, the bull servicing the cow.

Average cow weight	1200	<i>lbs</i>
Daily intake target for cow	2.6%	<i>as % of liveweight</i>
# of days cow is on ranch	365	<i>calendar days</i>
Expected calf weaning weight	535	<i>lbs/calf</i>
DOA at weaning	210	<i>days</i>
Gain / day	2.18	<i>lbs/hd/day</i>
205 day target	521	<i>lbs/hd</i>
205 day Weaning weight %	43%	<i>calf:dam</i>
% weaned for cows exposed	86%	
culling for herd improvement	3%	
Cow cull rate	17%	<i>open & dries + culls</i>
Cow:Bull ratio	30	
Mean bull weight	1500	<i>lbs/hd</i>
Annual feed consumption/cow	11388	<i>lbs/cow/year</i>
Annual AUD consumed/cow	438	<i>AUD/cow/year</i>
AUD consumed/calf	48	<i>AUD/calf/yr</i>
AUD consumed/bull by cow share	18	<i>AUD/bull/yr</i>
AUD consumed per pair annually	504	<i>AUD/pair/yr</i>

Calculating revenue per AUD consumed

- We determined the annual revenue stream for our example cow-calf pair to be \$1820
- We determined the annual forage consumption for the cow, calf at side for 210 days, and the bull servicing her to be 504 AUD
- **Revenue/AUD (\$/AUD) to be:**
 $\$1,820/\text{pair} \div 504 \text{ AUD/pair} = \$3.61/\text{AUD}$

Gross margin example

- If your variable (operating) costs for maintaining a cow are \$1,120 annually and a cow earns \$1820 annually, the gross margin is \$680
- The gross margin ratio is 37% ($\$680/\1820)
- Profit margin will be increased more by reducing costs by \$100 than increasing income by \$100
- **Until gross margin >50%, focus on cost management....**
 - **Not increased production**



Per head, per acre, or per AUD?

- The number of head is the easiest thing to change on a ranch.
 - Were they cows, ewes, stockers, goats, bison..???
 - We can standardize with animal units
- The number of acres is more constant, but they may vary in use and/or productivity
 - They generate different number of AUDs
 - Some years we may harvest more or less
- AUDs is a measure of what was harvested & is independent of particular livestock class



Ways we might express gross margin

- Whole ranch
 - *\$100,000 for the entire 1000-acre ranch*
- Per head
 - *If we run 200 head, then $\$100,000 / 200 \text{ hd} = \$500/\text{hd}$*
- Per acre
 - *$\$100,000 / 1000 \text{ acres} = \$100/\text{acre}$*
- Per animal unit-day
 - *$200 \text{ hd} \times 365 \text{ days} \times \text{AU equivalency} = 73,000 \text{ AUD}$*
 - *$\$100,000 / 73,000 \text{ AUD} = \$1.37/\text{AUD}$*



Gross Margin as \$/AUD

- Allows us to compare the potential profitability of different livestock enterprises
- In general, the cost to produce one AUD is the same whether it is harvested by a cow, a yearling, or a sheep.
- Specialty livestock enterprises may have a different cost/AUD

Basic business principles apply in farming and ranching

- Gross Margin Analysis
- Overhead Ratio

Profit = Income – Costs:

Understanding overhead ratio

- How much of total costs are tied up in overheads ?
- Ratio is overheads/gross income
- For sustainable ranching overhead ratio must be less than 50% (RMC Benchmarks)
- **Target should be less than 33%**



Overhead summary example on fixed land base capable of supporting 500 cows

Why we don't call them Fixed costs!

Overhead summary							
Herd size	Labor	Land	Facilities	Equipment	Utilities	Total	OH/Cow
0	\$ 30,000	\$ 50,000	\$ 10,000	\$ 4,000	\$ 2,000	\$ 96,000	\$ 96,000
50	\$ 30,000	\$ 50,000	\$ 10,000	\$ 8,000	\$ 3,000	\$ 101,000	\$ 2,020
100	\$ 30,000	\$ 50,000	\$ 10,000	\$ 12,000	\$ 4,000	\$ 106,000	\$ 1,060
200	\$ 30,000	\$ 50,000	\$ 12,500	\$ 15,000	\$ 4,500	\$ 112,000	\$ 560
300	\$ 35,000	\$ 50,000	\$ 15,000	\$ 17,000	\$ 4,750	\$ 121,750	\$ 406
400	\$ 40,000	\$ 50,000	\$ 20,000	\$ 19,000	\$ 5,000	\$ 134,000	\$ 335
500	\$ 50,000	\$ 50,000	\$ 25,000	\$ 20,000	\$ 5,100	\$ 150,100	\$ 300

Profit = Income – Costs:

Understanding overhead ratio

- Calculating overhead ratio
 - If overhead costs/cow are \$580 and gross income/cow is \$1820
 - Overhead ratio is 32% ($\$580/\1820)...
....this ranch has a chance of surviving

But not thriving



Top four costs I find with my consulting clients

- Winter feed
 - Equipment depreciation
 - Equipment operation
 - Fertilizer
 - Irrigation
- Cow depreciation
- Land
- Labor



What about cow depreciation ?



- *It is a real cost....*
- *.... and it must be accounted for in the budget*



Cow depreciation: Overhead or operating cost ?

- If you own a cow herd you likely incur depreciation, therefore it is an overhead
- But it is incurred every year and must be paid for by the current calf crop, therefore it is an operating cost
- How ever you classify cow depreciation, it is a real cost



Understanding cow depreciation

- The difference between purchase price and salvage value
- Spread over the calves a cow produces in her lifetime
- With interest charged



What affects cow depreciation ?

- Spread between replacement or purchase cost and salvage value
 - The greater the spread, the higher the annual depreciation charge

If a cow produces five calves...

And the spread is \$500, annual cost is \$100

But if the spread is \$1000...

.... The annual cost is \$200



Cow depreciation example: 2003 example

- Purchase cow for \$1000
- Salvage value \$ 500
- Difference **-\$500**

- Cow has 5 calves, so the charge is \$100 per calf plus interest charge for the five years she tied up your money
- @ 8% interest annual charge is **\$125.23**



Cow depreciation example:

Example with cow purchased in 2013

- Purchase cow for \$2500
- Salvage value \$ 800
- Difference **-\$1700**
- Cow has 5 calves, so the charge is \$340 per calf plus interest charge for the five years she tied up your money
- @ 5% interest, the annual charge is **\$393/calf**



Cow depreciation example:

Example with cow purchased in 2025

- Purchase cow for \$3000
- Salvage value \$ 1200
- Difference **-\$1800**
- Cow has 5 calves, so the charge is \$360 per calf plus interest charge for the five years she tied up your money
- @ 7% interest, the annual charge is **\$511/calf**



**On the downside of the cattle cycle,
cow depreciation becomes the biggest
line-item in the cow-calf budget...**



... and it will be devastating

What affects cow depreciation ?

- Spread between replacement or purchase cost and salvage value
- Cow longevity
 - The more calves a cow produces in her lifetime, the more units over which to spread depreciation cost



How many calves does the average beef cow produce in her first ownership before culling?



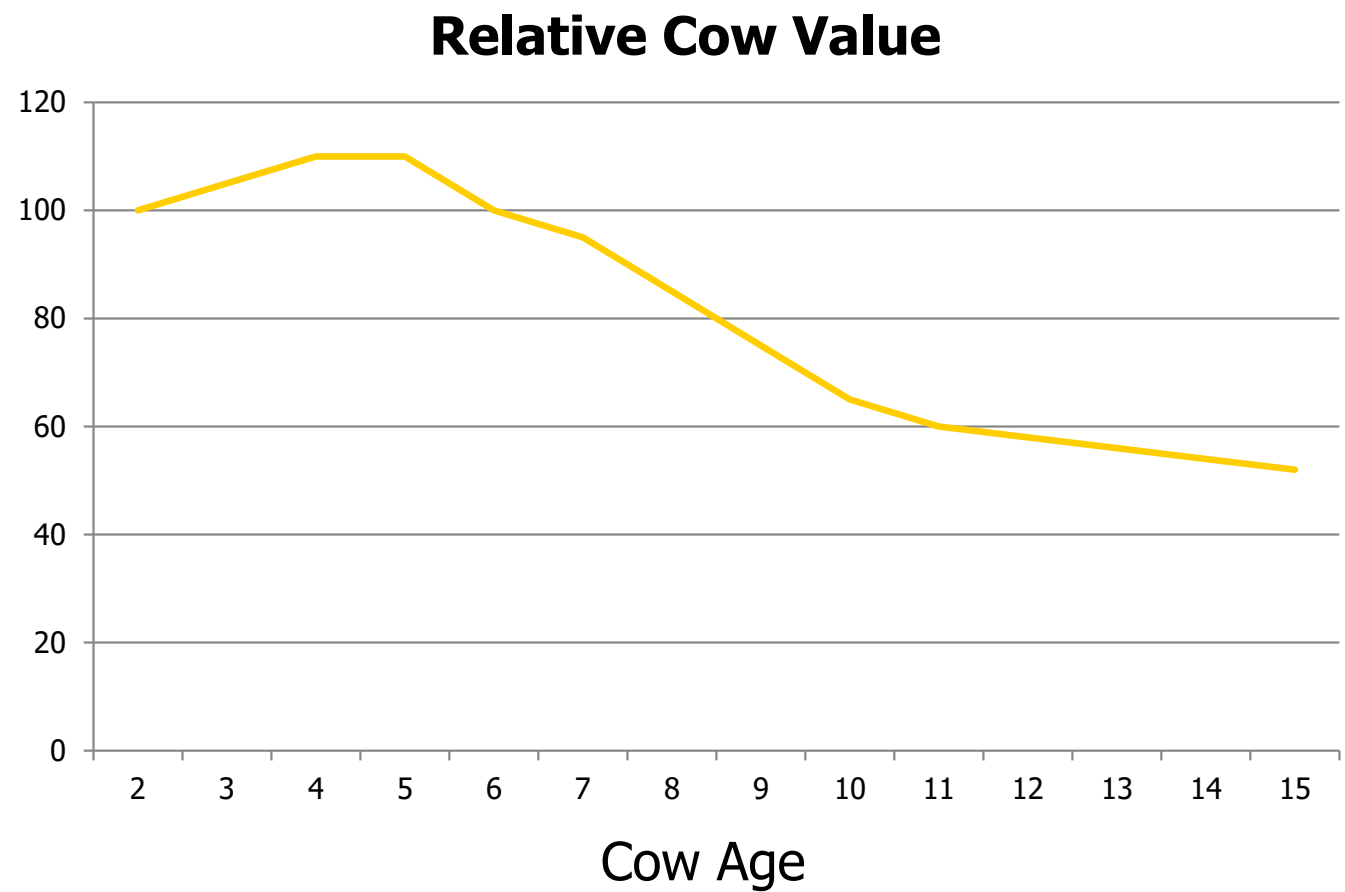
Not as many as you think !

% retained in <u>herd</u>	Number of <u>calves in lifetime</u>
95%	13.3
90%	6.5
85%	4.2
80%	3.1
75%	2.4



Cow value X Age

- A cow that breeds every year does not usually drop in value below replacement price until about 5-6 years of age



Let's take a break!



What really determines profitability?

- *Operating at optimal economic & biological carrying capacity*
 - *If you can produce more forage and/or carry more animals from the same set of base resources through better management, the lower your overhead cost per unit of production*
 - *The more animals you have to sell, generally the higher your potential revenue stream*
 - *There is an efficiency of scale for labor, input costs, and other sundry aspects of ranching*



Some Useful Definitions

- **Stocking rate:** The number of animals or animal live weight assigned to a grazing unit on a seasonal basis.

This is your measure of forage demand

- **Carrying Capacity:** The stocking rate that can be carried while maintaining or improving the resource condition while making a profit

This is your measure of forage supply

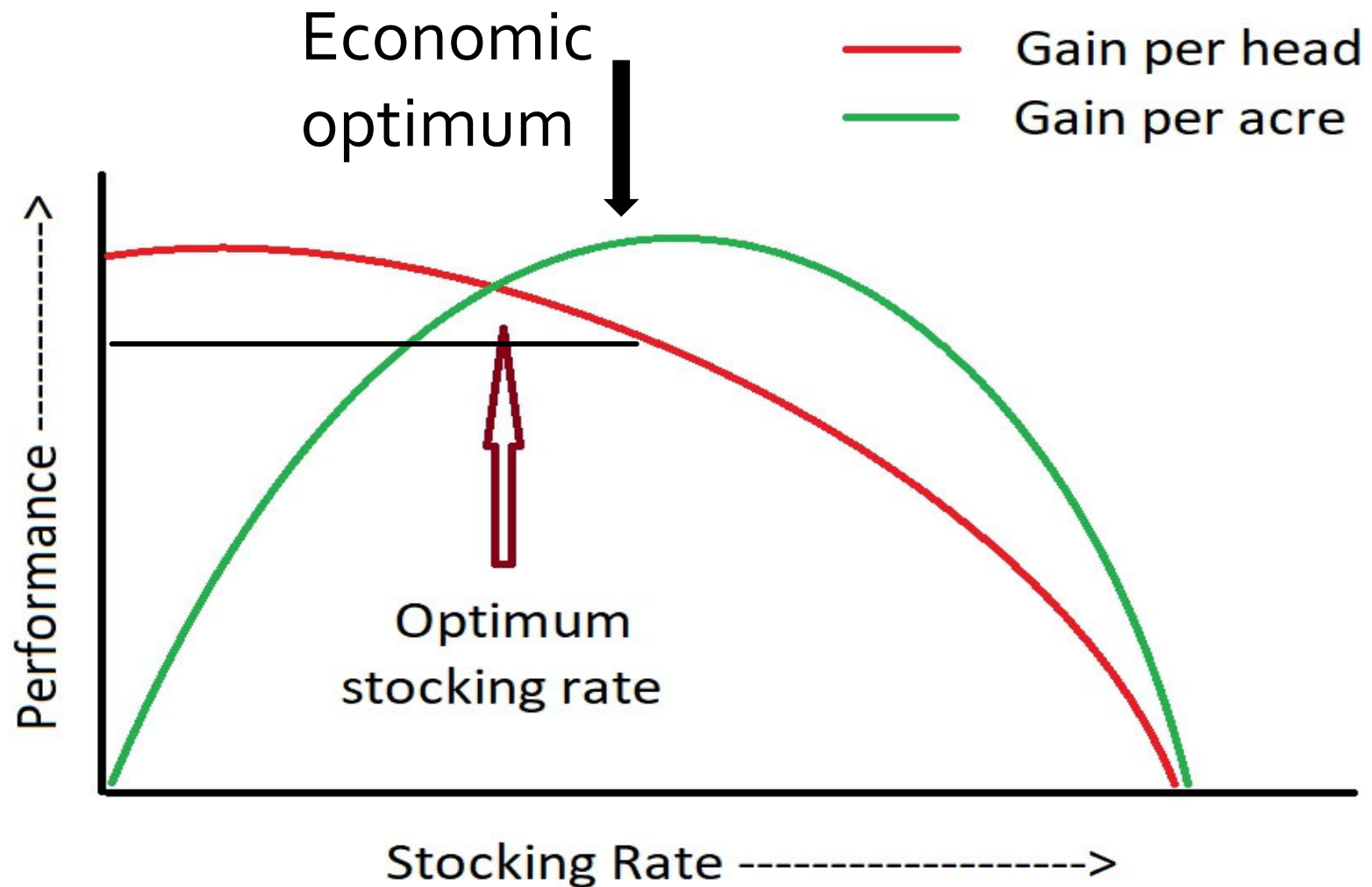


Why does stocking rate matter?

- A primary determinant of profitability
 - The more animals on the place, generally the higher the revenue stream
- A primary determinant of animal performance
 - Especially if optimal carrying capacity is exceeded
- As stocking rate increases:
 - Individual animal performance declines
 - Production per acre increases, up to a point



Classic Mott Curve: Gain/head vs Gain/acre



First rule of grazing management

- Do not allow stocking rate to exceed carrying capacity!



Keys to profitability:

Most of our costs are land-based

LAND-BASED ASSETS

- Land ownership
- Land lease
- Property taxes
- Equipment
- Seeding
- Fertilization
- Fencing
- Stock water
- Irrigation, weed control, etc.

LIVESTOCK-BASED ASSETS

- Livestock
- Stock trailers
- Corrals & Scales
- Feed storage
- Hay & grain feeders
- Mineral feeders
- Vet-Med



Keys to profitability:

Most of our costs are land-based

- Land ownership
- Land lease
- Property taxes
- Equipment
- Seeding
- Fertilization
- Fencing
- Stock water
- Irrigation, weed control, etc.

On the typical ranch, value of land-based assets will be 3-5X greater than the value of livestock on that ranch!

We need to get more out of every acre!



Carrying capacity is determined by the combination of environment and management

- Environment sets the upper limit of what is possible, management determines what you get



Operating at optimal economic & biological carrying capacity

Estimating carrying capacity:

$$\text{Carrying Capacity} = \frac{\text{Forage Production} \times \text{Seasonal Utilization Rate}}{\text{Daily Intake} \times \text{Length of the Grazing Season}}$$



What I learned from Bud Williams:

Three inventories to manage

- Available feed
 - You can't have too much of this
- Capital
 - You can't have too much of this
- Livestock
 - You can sometimes have too many of these



Available forage inventory

- A ranch with excess available forage always has opportunities
- An overstocked ranch always has challenges



Available capital gives you flexibility

- Buy more livestock
- Lease more land
- Buy in feed
- Go to Vegas



Overstocked & going broke?



Producing 120-140 AUD/A



Producing 240-300 AUD/A



We don't always need more cattle, what we need are more functional cattle

- Small to moderate frame
- Deep body
- Easy fleshing
- Fast to shed winter coat
- Natural fertility
- Natural pest resistance
- Longevity
- Good temperament



Key Concepts:

- **Ranching is a land-based business & the livestock are only incidental**
- **Profit needs to be assessed on a per acre basis, not per head basis**



Operating at optimal economic & biological carrying capacity

- Keys to success
 - Increase forage production through management, not purchased inputs
 - Increase seasonal utilization rate by shortening grazing period on productive pastures
 - Increase seasonal utilization rate through better grazing distribution on rangeland
 - Keep daily forage intake appropriate to the needed performance target
 - Graze as many days of the year as possible



What really determines profitability?

- *Matching your livestock to your environment & forage resources*
- *Operating at optimal economic & biological carrying capacity*



Does cow size really matter?



12/05/2009

What might cow size affect?

- Calf size ?
- Forage consumption ?
- Reproductive efficiency ?
- Purchase price ?
- Salvage value ?
- Carrying capacity ??
- Pasture or range composition ???
- Weed invasion ????
- Water cycle function ?????
- Soil erosion ??????



How does cow size affect carrying capacity of a farm or ranch?

Stocking Rate	Cow wt	Weaning wt
100	1000	510
91	1100	530
84	1200	580
76	1300	600
71	1400	610
67	1500	612
Difference	500	102

Dr. Allen Williams, Mississippi State U, SPA Summary for 5 Southeastern States



Do bigger cows raise bigger calves?

Stocking Rate	Cow wt	Weaning wt	Weaning wt as % of dam
100	1000	510	51 %
91	1100	530	48.2%
84	1200	580	48.3%
76	1300	600	46.2%
71	1400	610	43.6%
67	1500	612	40.8%
Difference	500	102	

***A 50% increase
in cow weight
generated only a
20% increase in
calf weight!***

Dr. Allen Williams, Mississippi State U, SPA Summary for 5 Southeastern States

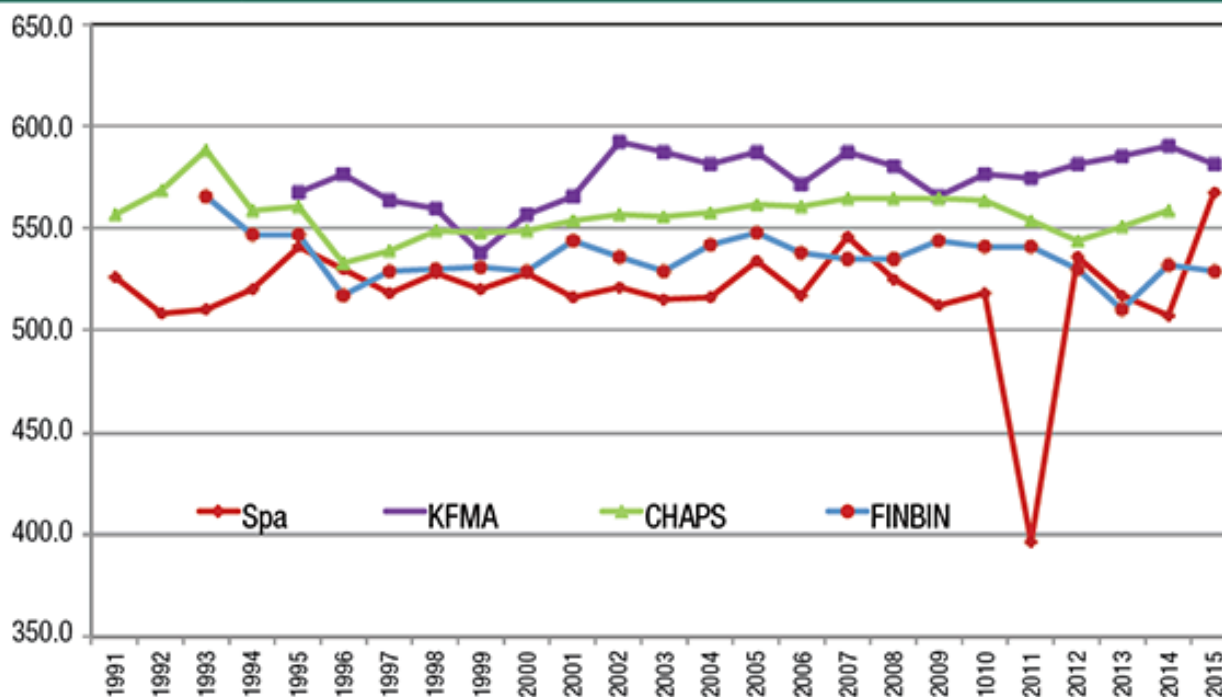
Sometimes they do....

.... but increase isn't proportional to cow weight



Shockingly little increase in weaning weights over last 25 years!

FIGURE 1 Weaning weight in commercial cow-calf operations



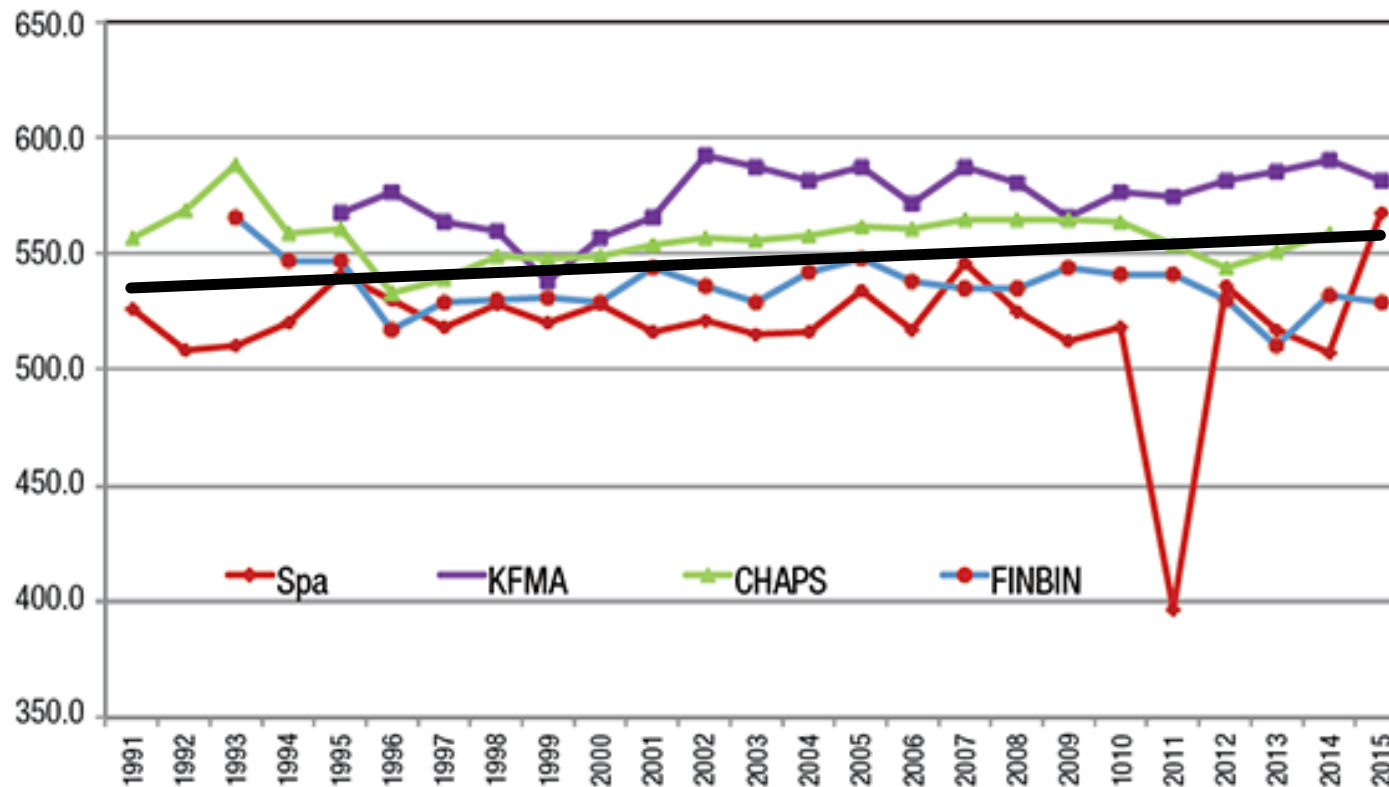
Source: Kansas: Kansas Farm Management Association (KFMA) – Kevin Herbel, North Dakota: Cow Herd Appraisal Performance Software (CHAPS) – Dr. Kris Ringwall, New Mexico, Oklahoma, Texas: Standardized Performance Analysis (SPA) – Dr. Stan Bevers, Upper Midwest (FINBIN), Center for Farm Financial Management, University of Minnesota



Shockingly little increase in weaning weights over last 25 years!

FIGURE 1

Weaning weight in commercial cow-calf operations



The mean increase in weaning weight over 25 years has been 15 - 20 lbs

In the same 25 years, mean cow weight has increased 300 lbs!

Source: Kansas: Kansas Farm Management Association (KFMA) – Kevin Herbel, North Dakota: Cow Herd Appraisal Performance Software (CHAPS) – Dr. Kris Ringwall, New Mexico, Oklahoma, Texas: Standardized Performance Analysis (SPA) – Dr. Stan Bevers, Upper Midwest (FINBIN), Center for Farm Financial Management, University of Minnesota



Do bigger cows raise more calves?

Stocking Rate	Cow wt	Weaning wt	% calf crop	# of calves
100	1000	510	92%	92
91	1100	530	89%	81
84	1200	580	87%	73
76	1300	600	85%	64
71	1400	610	83%	59
67	1500	612	82%	55
Difference	500	102	-10%	-37

Dr. Allen Williams, Mississippi State U, SPA Summary for 5 Southeastern States

Hardly ever !

The bigger the cow, the harder she is to breed



Do bigger cows produce more calf weight?

Stocking Rate	Cow wt	Weaning wt	% calf crop	# of calves	Weaning wt /cow exposed
100	1000	510	92%	92	444
91	1100	530	89%	81	448
84	1200	580	87%	73	490
76	1300	600	85%	64	482
71	1400	610	83%	59	481
67	1500	612	82%	55	475
Difference	500	102	-10%	-37	-31

Dr. Allen Williams, Mississippi State U, SPA Summary for 5 Southeastern States

Not on a per herd basis !

....weaned calf weight per cow peaked at 1200 lbs



Do bigger cows produce more income?

Stocking Rate	Cow wt	Weaning wt	% calf crop	# of calves	Weaning wt /cow exposed	Calf value	Total calf crop value
100	1000	510	92%	92	444	\$ 867	\$ 79,764
91	1100	530	89%	81	448	\$ 875	\$ 70,875
84	1200	580	87%	73	490	\$ 940	\$ 68,620
76	1300	600	85%	64	482	\$ 936	\$ 59,904
71	1400	610	83%	59	481	\$ 939	\$ 55,401
67	1500	612	82%	55	475	\$ 936	\$ 51,480
Difference	500	102	-10%	-37	-31	\$ 73	\$ (28,284)

Dr. Allen Williams, Mississippi State U, SPA Summary for 5 Southeastern States

Total income from annual calf crop steadily declined as cow size increased!



Do bigger cows produce more income from cull cow sales?

Stocking Rate	Cow wt	% calf crop	Total calf crop value	Cull cows sold	Wt of cull cows sold	Value of culls sold	Cow + Calf income
100	1000	92%	\$ 79,764	8	8000	\$ 4,800	\$ 84,564
91	1100	89%	\$ 70,875	10	11011	\$ 6,607	\$ 77,482
84	1200	87%	\$ 68,620	11	13104	\$ 7,862	\$ 76,482
76	1300	85%	\$ 59,904	11	14820	\$ 8,892	\$ 68,796
71	1400	83%	\$ 55,401	12	16898	\$ 10,139	\$ 65,540
67	1500	82%	\$ 51,480	12	18090	\$ 10,854	\$ 62,334
Difference	500	-10%	\$ (28,284)				\$ (22,230)

Dr. Allen Williams, Mississippi State U, SPA Summary for 5 Southeastern States

Total income from calves & cull cow sales steadily declined as cow size increased!



Do bigger cows raise bigger calves?

North Dakota State, Dr. Kris Ringwall

<u>Cow size</u> (lbs/hd)	<u>calf weaning weight</u> (lbs/hd)	weaning wt as % of dam
<1300	617	49%
1301 - 1400	611	45%
1401 - 1500	589	41%
1501 - 1600	598	39%
>1600	572	35%

How can this possibly be?

Limited feed supply restricts milk production as well as selective grazing by calves

Dr. Kris Ringwall, North Dakota State University, Dickinson Research Center

Not always!



Do bigger cows eat more than smaller cows ?

<u>Cow size</u>	<u>calf weaning weight</u>	weaning wt as % of dam	Intake as % of BWT	<u>annual forage intake</u>	<u>Daily intake</u>
<1300	617	49%	2.45%	11196	30.7
1301 - 1400	611	45%	2.43%	11964	32.8
1401 - 1500	589	41%	2.38%	12612	34.6
1501 - 1600	598	39%	2.34%	13212	36.2
>1600	572	35%	2.37%	14256	39.1

As a % of bodyweight, no they don't

In absolute terms, yes they do



Do bigger cows make a ranch more productive?

<u>Cow size</u>	<u>calf weaning weight</u>	weaning wt as % of dam	Intake as % of BWT	<u>annual forage intake</u>	Daily intake	<u>lb forage / lb calf</u>	<u>calf gain/acre</u>
<1300	617	49%	2.45%	11196	30.7	18.1	31.2
1301 - 1400	611	45%	2.43%	11964	32.8	19.6	28.9
1401 - 1500	589	41%	2.38%	12612	34.6	21.4	26.2
1501 - 1600	598	39%	2.34%	13212	36.2	22.1	25.5
>1600	572	35%	2.37%	14256	39.1	24.9	22.4

NO !!!



Today's Beef challenge

- **In the current beef production model, there is an inherent conflict between the cow-calf producer & the cattle feeder**
 - Cow-calf efficiency on pasture declines rapidly when cows are bigger than 1200 lbs
 - Custom cattle feeders make their money with long occupancy & feeding a lot of feed to one pen
 - 2024 liveweight steers headed for slaughter averaged about 1400 lbs



Dam weight to finished steer weight ratios

- The approximate finish weight of steers can be predicted based on the weight of their dam when bred to bulls of similar frame score
- For cows bred to terminal sires, add 50-75 lbs for each frame score bull exceeds cow frame score

Quality Grade	% of dams wt
Mid Select	83-88
High Select	88-91
Low Choice	91-96
Mid Choice	96-103
High Choice	103-112
Prime	112-120



Dam weight to finished steer weight ratios

- A 1400-lb live steer fed to mid-Choice likely comes from a 1400-lb cow.

Quality Grade	% of dams wt
Mid Select	83-88
High Select	88-91
Low Choice	91-96
Mid Choice	96-103
High Choice	103-112
Prime	112-120

The objectives of a cow-calf rancher do not coincide with the goals of the custom cattle feeder



Bottom line:

**There is a strong inverse relationship
between cow size and ranch income**



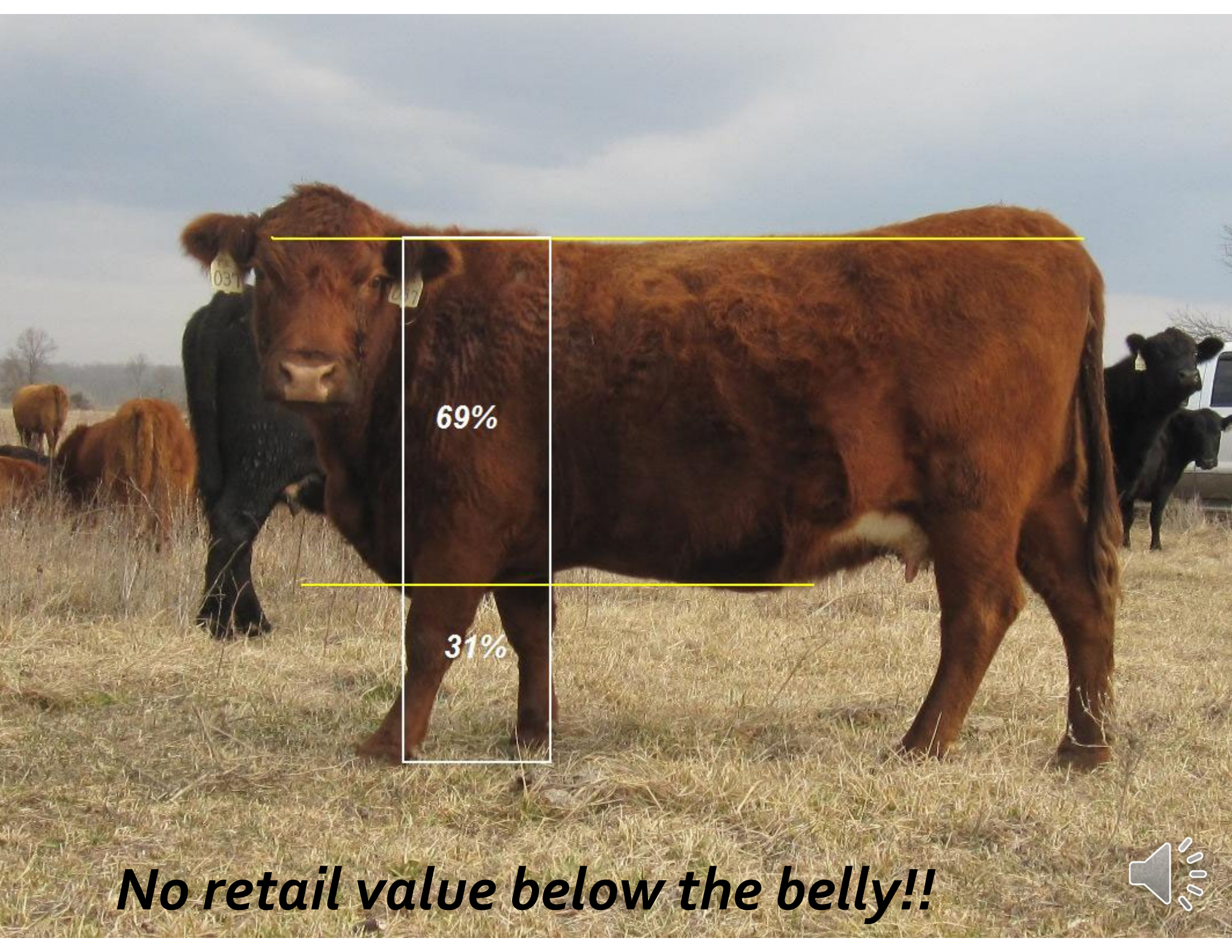
The bigger they are, the harder they fall 📢

Almost everything said here about cow size can be applied to sheep



Evaluating cattle type: Phenological traits of a working cow



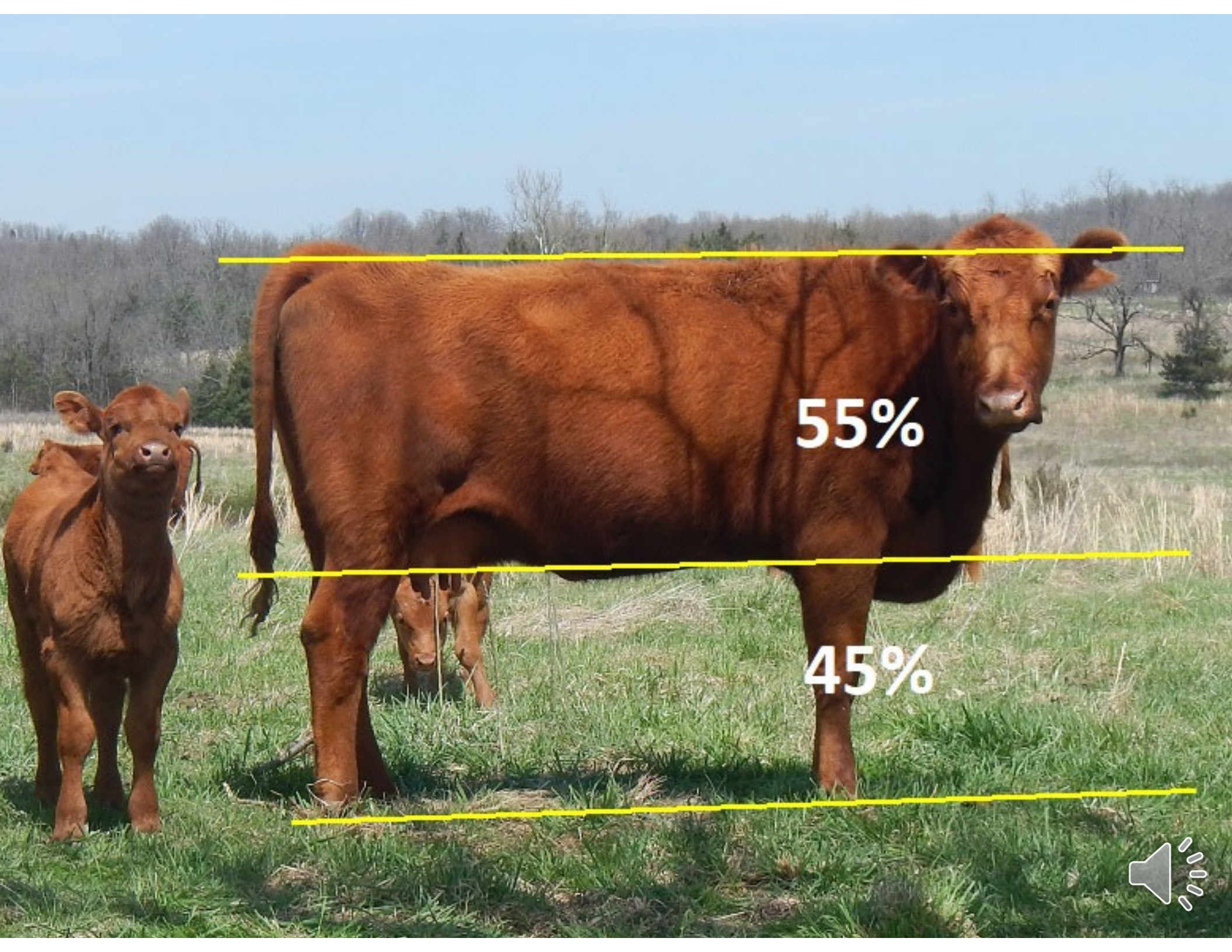


69%

31%

No retail value below the belly!!



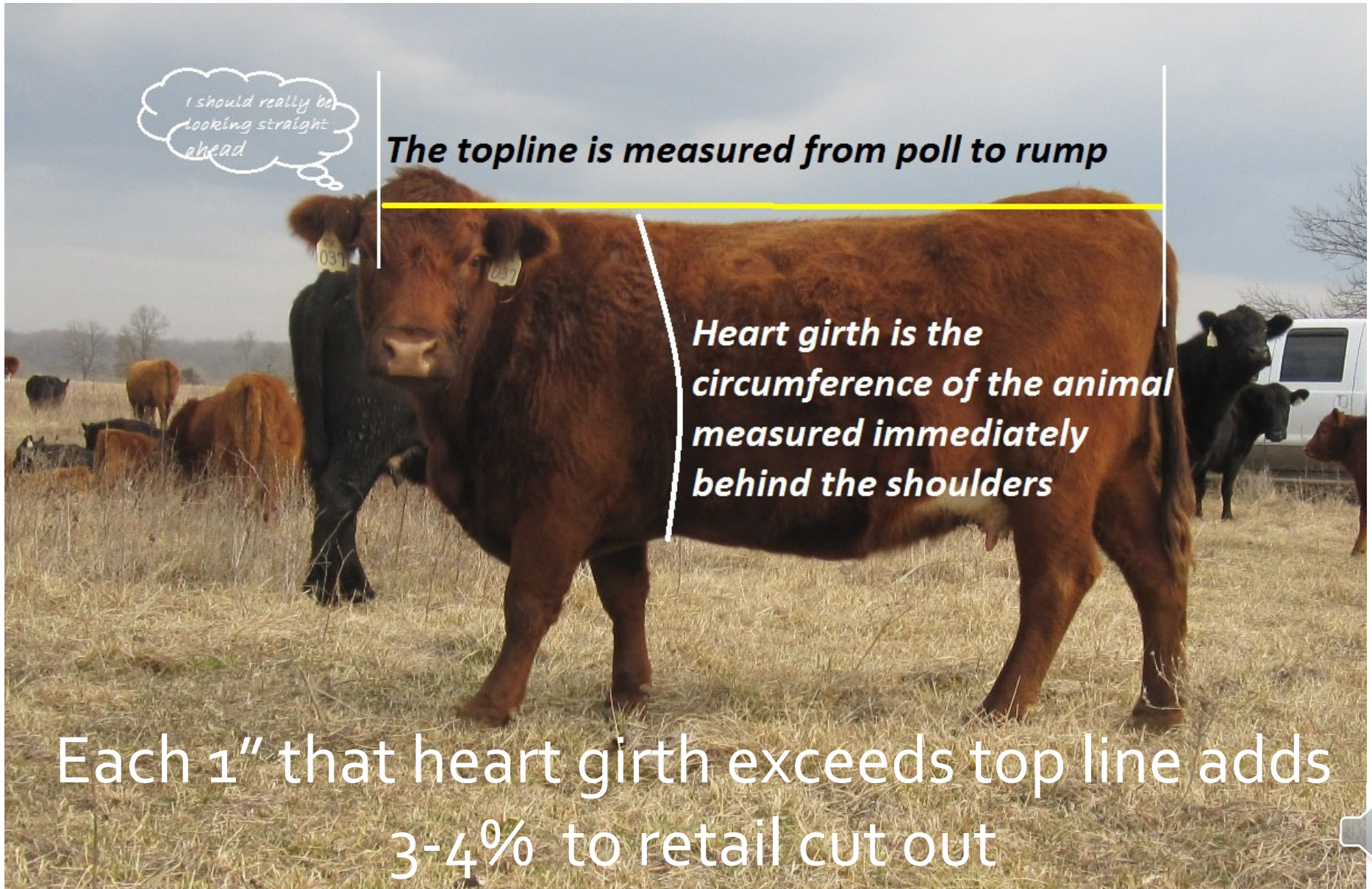


55%

45%



Evaluating cattle type: Heart Girth & Top Line

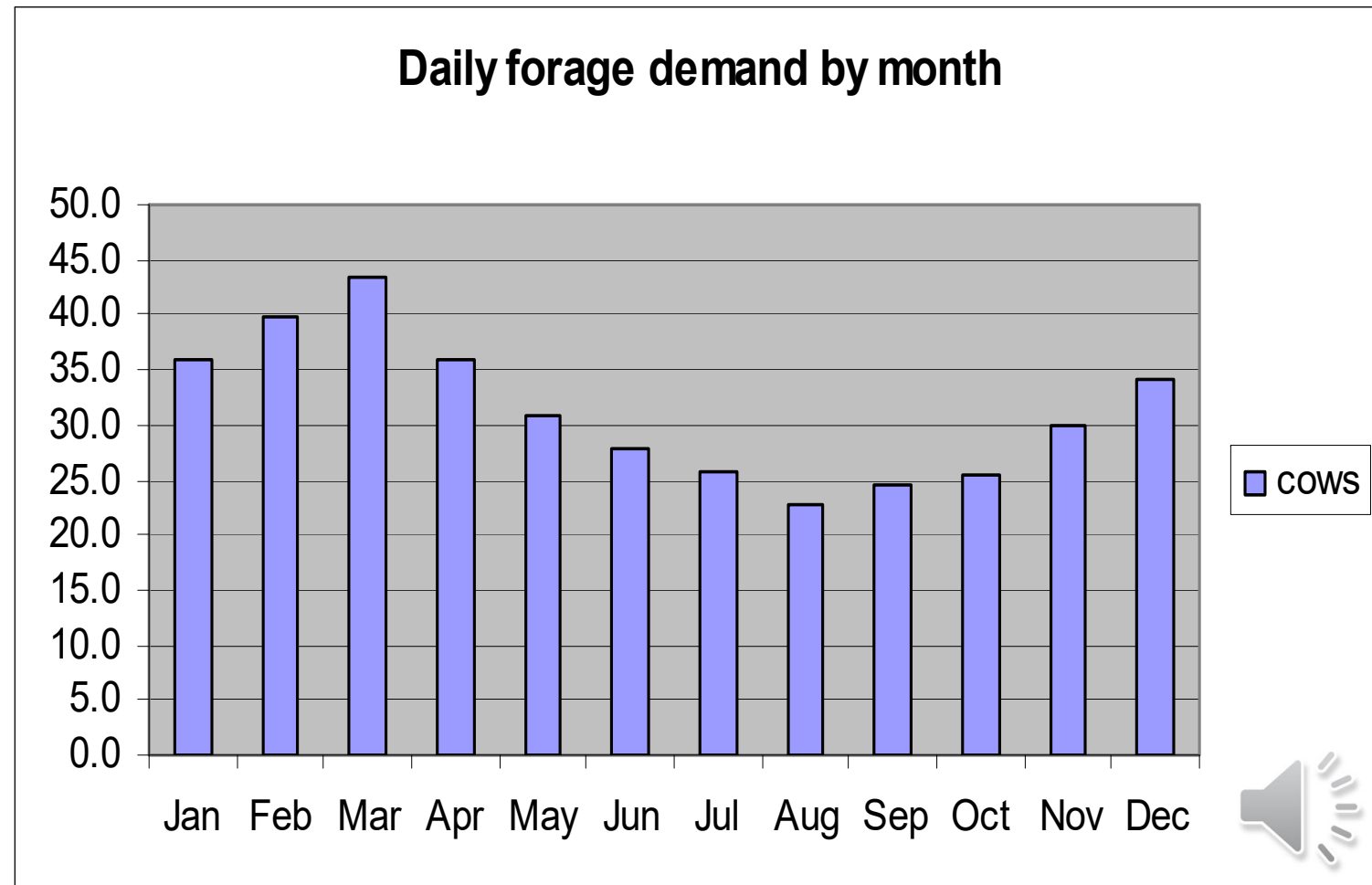


Matching forage & livestock resources: Calving in synch with your forage supply



Cow nutritional requirements are seasonal: January calving

- Energy demand is highest at peak lactation
- 30 to 90 days post-calving



Highest energy demand occurs from calving to rebreeding



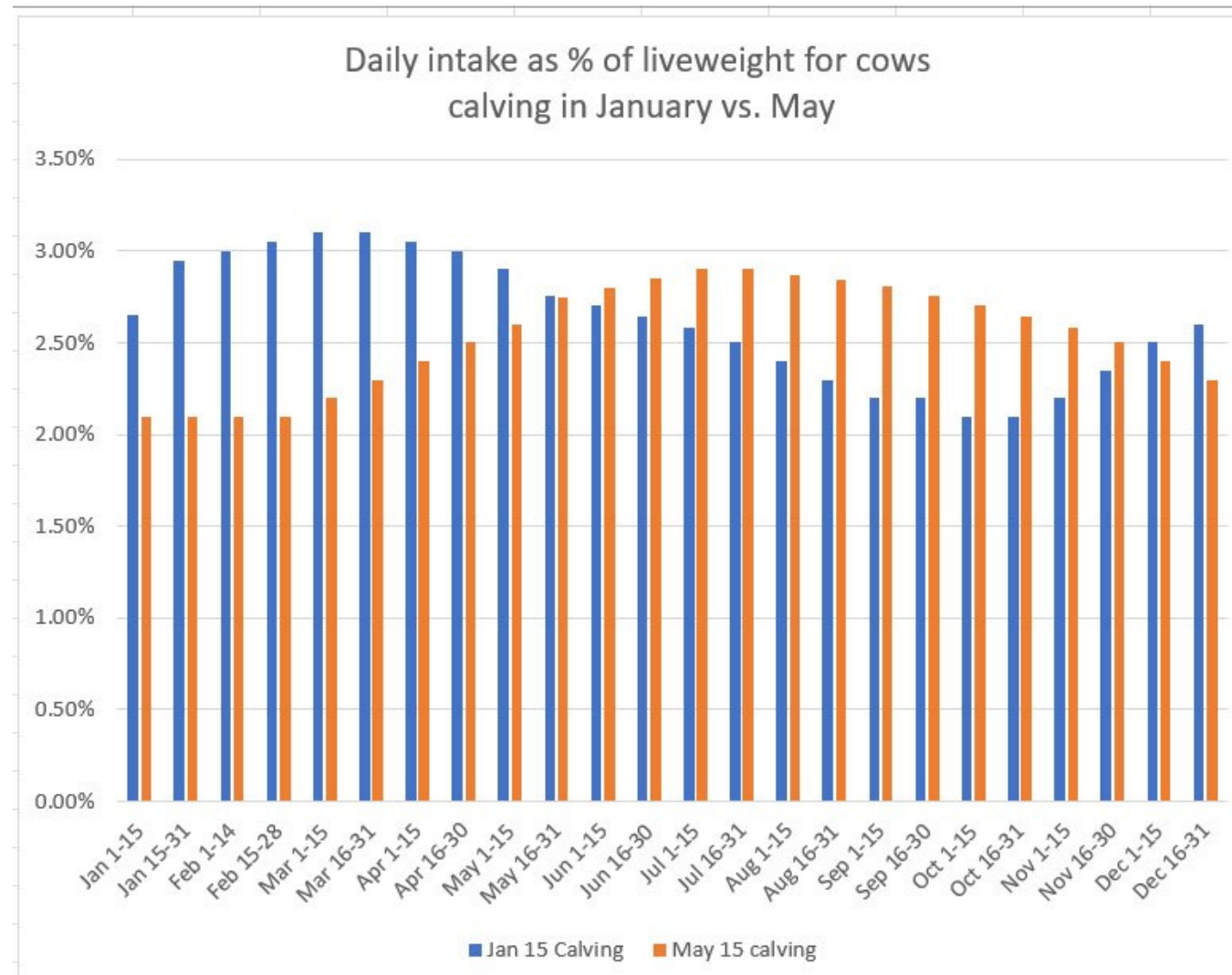
Match calving season to forage supply opportunities



When is your feed least expensive & when is it most expensive?

Winter calving has highest feed demand when feed is most expensive

Calving on green grass has highest feed demand when feed is least expensive



What really determines profitability?

- *Managing feed costs on both the pasture and harvested forage fronts*
- *Matching your livestock to your environment & forage resources*
- *Operating at optimal economic & biological carrying capacity*



Cow-calf producers in....

Minnesota

Missouri

Mississippi...

All feed hay for about 130 days

WHY?



Economic climate - 1973

- In May of 1973 my Dad bought one of the first Vermeer 605C balers in the state of Illinois

- Cost: \$4,200

- In July 1973 fed cattle hit an all-time record high price

- Fed Cattle: \$54/cwt



Other notable events of 1973

- Jim graduated from high school
- First OPEC oil embargo – fuel prices doubled
- Housewife beef boycott
- President Nixon capped beef prices
- President Nixon halted all beef exports

By July 1974, fed cattle prices had fallen to less than \$20/cwt.

Economic climate - 2014

- Fed cattle hit an all-time record high price at an astounding \$178/cwt
- A new Vermeer 605M large round baler cost about \$40,000 depending on features



Economic Climate - 2025

- Vermeer baler - \$65,000
- Big square baler - \$190,000
- *Fed cattle - \$245/cwt*



Changing economies

Input	1973	2025	% increase
Large Round Hay Baler	\$4,200	\$65,000	1447%
Diesel Fuel	\$0.17 / gal	\$2.75 /gal	1617%
Farm labor	\$1.50 / hr	\$16.62 / hr	1008%
Nitrogen fertilizer	\$ 0.09 / lb	\$ 0.69 / lb	767%
Income	1973	2025	% increase
Custom charge for baling	\$ 6.00 / bale	\$ 15 / bale	250%
Fed cattle record highs	\$54 / cwt	\$245 / cwt	454%

What if we adjust for inflation as well?

Input	1973	2023	Inflation Rate only
Large Round Hay Baler	\$4,200	\$65,000	\$30,660
Diesel Fuel	\$0.17 / gal	\$2.75 /gal	\$1.24
Farm labor	\$1.50 / hr	\$16.62 / hr	\$10.65
Nitrogen fertilizer	\$ 0.09 / lb	\$ 0.69/ lb	\$0.66
Income	1973	2023	Inflation
Custom charge for baling	\$ 6.00 / bale	\$ 15 / bale	\$43.80
Fed cattle record highs	\$54 / cwt	\$245 / cwt	\$394

**Input costs have increased at 4X to 10X
the value of beef cattle since 1973**

*We can no longer sustain our
dependency on iron and oil!*



How many calves does it take....

COWBOY COST- 1973

- Pay cowboy wage – 21 calves
- $\frac{3}{4}$ ton 4WD pickup – 20 calves
- Total annual cost to pay & equip a cowboy
 - 52 calves

COWBOY COST - 2023

- Pay cowboy wage – 49 calves
- $\frac{3}{4}$ ton 4WD pickup – 71 calves
- Total annual cost to pay & equip a cowboy
 - 138 calves

The reality of 'Record High' prices

- In inflation adjusted dollars or Consumer Price Index...

.... Today's record high fed cattle prices are only 62% of the value fed cattle were in 1973



What is a cow's job description?



What is a cow's job description?

- Rustle her own grub
- Find the best bite of feed she can
- Deliver a live calf every 12 months
- Bring a live calf to the weaning pen
- Stay healthy without a lot of fuss
- Mow weeds, fertilize pastures.
Plant seeds, till ground, etc.
- Come to work with a positive attitude every day



What is the manager's role?

- Create a working environment where your employees can thrive
- Maintain ranch infrastructure
- Market ranch products
- Plan, Monitor, Adapt, Re-plan

What really determines profitability?

- *Enterprise selection*
- *Managing feed costs on both the pasture and harvested forage fronts*
- *Matching your livestock to your environment & forage resources*
- *Operating at optimal economic & biological carrying capacity*



The Sutter Family, Millstadt IL 56 acres: “How do we make a \$1000 per acre?”



How do we earn \$1,000/acre ?



How do we earn \$1,000/acre?



How do we earn \$1,000/acre ?



How do we earn \$1,000/acre?



How do we earn \$1,000 / acre ?



How do we earn \$1,000/acre?



How do we earn \$1,000/acre



Six different beef enterprises and gross margin value/AUD harvested

Cow size is 1400 lbs

	<u>Cow-calf Pair</u>	<u>Growing Stocker</u>	<u>Finishing /Bulls</u>	<u>Replacement Heifers</u>	<u>Custom Stockers</u>	<u>Burger-Cow</u>	
Mean animal live weight while on ranch	1400	735	1080	986	605	1113	lbs/hd
Animal unit equivalency	1.4	0.74	1.08	0.99	0.605	1.11	live wt/1000 lbs
# of calendar days stock are on the ranch	365	180	210	285	120	90	calendar days
Target intake rate	2.8%	2.5%	2.6%	2.5%	2.7%	3.0%	as % of weight
Daily forage consumption	39.2	18.2	27.8	24.4	16.1	33.1	lbs/hd/day
Forage consumption for time on ranch	14308	3283	5847	6946	1933	2982	lbs/hd/day
Seasonal equivalent AUD consumption	550	126	225	267	74	115	AUD/year
Gross return per animal	\$ 979	\$ 1,148	\$ 2,000	\$ 1,400	\$ 88	796.25	\$ /animal /year
Operating cost per animal	\$ 1,008	\$ 1,128	\$ 1,516	\$ 1,390	\$ 108	\$ 697	\$ /animal /year
Gross margin / animal	\$ (30)	\$ 20	\$ 484	\$ 10	\$ (20)	\$ 99.25	\$ /animal /year
Gross margin value / AUD	\$ (0.06)	\$ 0.15	\$ 2.13	\$ 0.04	\$ (0.27)	\$ 0.99	\$/AUD

The animal you choose to harvest your forage makes a big difference in profit potential!



Six different beef enterprises and gross margin value/AUD harvested

Cow size is 1150 lbs

	<u>Cow-calf Pair</u>	<u>Growing Stocker</u>	<u>Finishing /Bulls</u>	<u>Replacement Heifers</u>	<u>Custom Stockers</u>	<u>Burger-Cow</u>	
Mean animal live weight while on ranch	1150	675	960	930	605	1113	lbs/hd
Animal unit equivalency	1.15	0.68	0.96	0.93	0.605	1.11	live wt/1000 lbs
# of calendar days stock are on the ranch	365	180	150	285	120	90	calendar days
Target intake rate	2.8%	2.5%	2.7%	2.5%	2.7%	3.0%	as % of weight
Daily forage consumption	32.2	16.8	25.8	23.0	16.1	33.1	lbs/hd/day
Forage consumption for time on ranch	11753	3030	3864	6557	1933	2982	lbs/hd/day
Seasonal equivalent AUD consumption	452	117	149	252	74	115	AUD/year
Gross return per animal	\$ 930	\$ 1,094	\$ 1,998	\$ 1,400	\$ 88	796.25	\$ /animal /year
Operating cost per animal	\$ 844	\$ 1,069	\$ 1,341	\$ 1,298	\$ 108	\$ 697	\$ /animal /year
Gross margin / animal	\$ 86	\$ 24	\$ 657	\$ 102	\$ (20)	\$ 99.25	\$ /animal /year
Gross margin value / AUD	\$ 0.21	\$ 0.20	\$ 4.56	\$ 0.39	\$ (0.27)	\$ 0.99	\$/AUD

The size of cow you choose to harvest your forage makes a big difference in profit potential!



Total gross margin return from a conception to slaughter grass-fed beef program

Cow size is 1400 lbs

Total number of AUDs to be utilized by each class of livestock:	59257	12741	17500	4603	0	0	94100
Number of head of each class of livestock with this allocation:	108	101	78	17	0	0	
Expected Gross Margin revenue by livestock class:	\$ (3,214)	\$ 2,059	\$ 37,631	\$ 176	\$ -	\$ -	\$ 36,651
% of available AUDs used by each livestock class:	63%	14%	19%	5%	0%	0%	100%
% of gross margin income contribution by livestock class:	-9%	6%	103%	0%	0%	0%	100%



Total gross margin return from a conception to slaughter grass-fed beef program

Cow size is 1150 lbs

Total number of AUDs to be utilized by each class of livestock:	96829	20249	21193	16730	0	0	155000
Number of head of each class of livestock with this allocation:	214	174	143	66	0	0	
Expected Gross Margin revenue by livestock class:	\$ 18,445	\$ 4,222	\$ 93,681	\$ 6,789	\$ -	\$ -	\$ 123,137
% of available AUDs used by each livestock class:	62%	13%	14%	11%	0%	0%	100%
% of gross margin income contribution by livestock class:	15%	3%	76%	6%	0%	0%	100%

*Having the appropriate kind of cow
calving at the appropriate time of year
grazing as many days of the year as possible
within an appropriate enterprise combination
& effectively marketing your production*

*..... are the keys to profitability in a grass-farming operation with
beef cattle*



What really determines profitability?

- *Effectively market your products*
- *Enterprise selection*
- *Managing feed costs on both the pasture and harvested forage fronts*
- *Matching your livestock to your environment & forage resources*
- *Operating at optimal economic & biological carrying capacity*



Produce food, not commodities !

*Then get
them to the
consumer*



*Then get
them to the
consumer*



*Then get
them to the
consumer*



The Local-Natural Food Movement

- Why is it happening now?
 - Concern for our health & wellbeing



Diet & Health

- US Center for Disease Control estimates over 75% of health care costs in US are directly attributable to our diet
- Soil depletion has led to low mineral & vitamin content of the food we eat
- The least healthy crops are the most highly subsidized crops
- The industrial food system of the US is completely broken when it comes to health & wellbeing



Diet & Health

- All chronic diseases of modern man are directly attributable to diet
 - Real Food is the key to Real Health
 - Consumers can either pay the price for real food and gain real health or they can pay for inferior food and pay an ever increasing % of their income for fake health (a.k.a – pharmaceutical fixes)
 - Do not be afraid to charge consumers the true cost of producing high quality food – in the end it will be much cheaper than Obamacare



The Local-Natural Food Movement

- Why is it happening now?
 - Concern for our health & wellbeing
 - Concern for our natural resources



Diet & Health at the local level

- It is easier to take care of soil health at the local level
 - Integrating crop and livestock systems
 - Manure return to the land where it was generated
 - Long crop rotations with perennial pasture increase & enhance soil microbial life
 - Soil microbial life drives the mineral cycles in the soil
 - Without healthy soil, food is nutrient deficient



The Local-Natural Food Movement

- Why is it happening now?
 - Concern for our health & wellbeing
 - Concern for our natural resources
 - Concern for our local communities



Small town farmer's markets

- More & more small towns are having their own farmer's markets
- Every community needs a small core group to make a farmer's market work
- Keeps more money in the local economy



The 'farm-gate' multiplier effect

(from Dr. John Ikerd, U of MO Ag Econ)

- The number of times a dollar earned locally passes through the local economy
 - CAFO swine & poultry – 1.7 to 2.4 X
 - Commodity grain & cattle – 3.3 to 4.5 X
 - Value-added local food products – 6 to 8 X
- Supports local suppliers, processors, haulers, etc.



Do you have to be close to big city for this to work?

- Alder Springs Ranch
Glenn & Caryl Elzinga

120 miles to closest
town with over 10,000
people

Grass-fed beef shipped
nationwide



Challenges to the small farm

- Limited land area?

Produce high value products !



Challenges to the small farm

- Limited land area?

*Produce high value products !
Create a more productive environment*



Challenges to the small farm

- Produce value added products



***Make every pound
worth more***



Limited finances

- **Purchase livestock with fast turn-around time**
 - Poultry – broilers & layers
 - Feeder lambs
 - Feeder pigs
 - Heavy beef stockers
 - Early lactation dairy cows



There are people already doing it



- This 260-acre farm is 50 miles from the nearest city >100,000
- Over \$300,000 annually sold through their on-farm store
- Supports three families
 - The quick math says that is less than 100 acres per family!



There are people already doing it

- Coast to coast & Mexico to Canada
- A wide range of products are popular
- Make sure you sell your story as well as sell your products



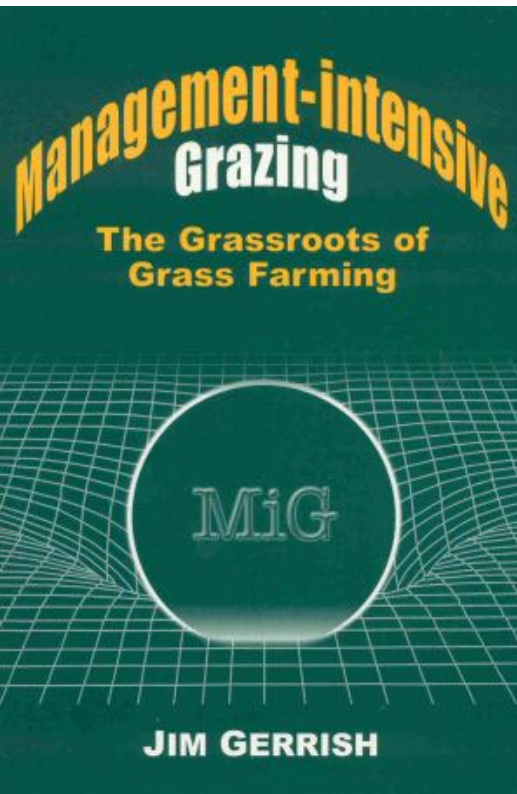
How do you make your dreams a reality?



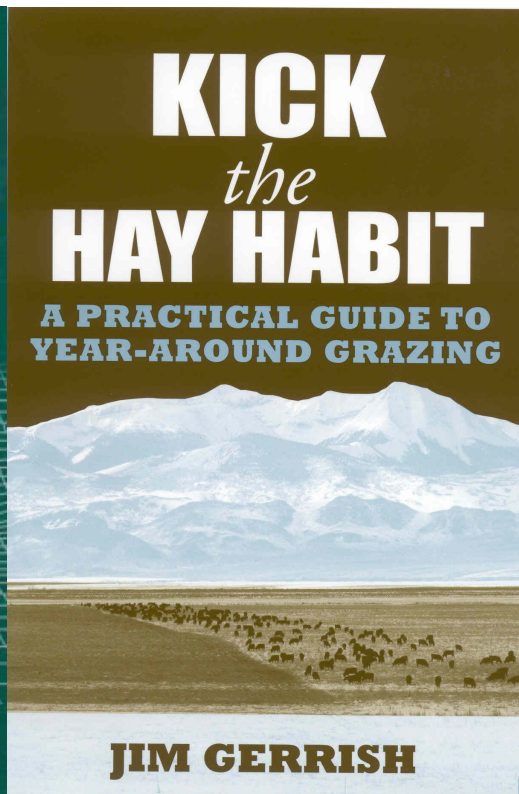
Goals
Commitment
Attitude



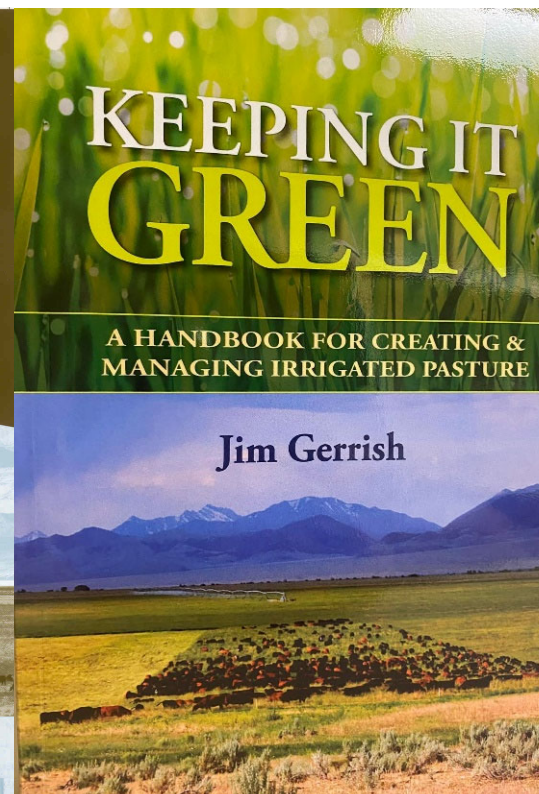
Books by Jim Gerrish



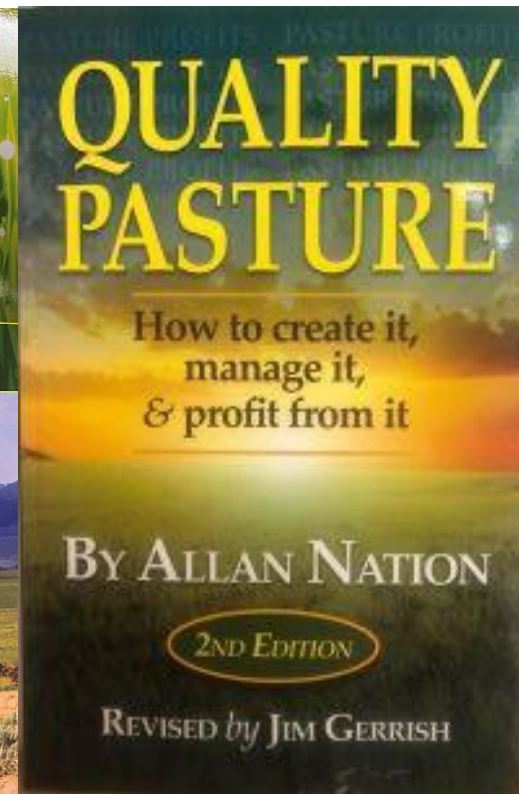
\$31



\$27



\$20



\$30

<https://www.americangrazinglands.com/collections/books-more>

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