Targeted Livestock Supplementation Programs

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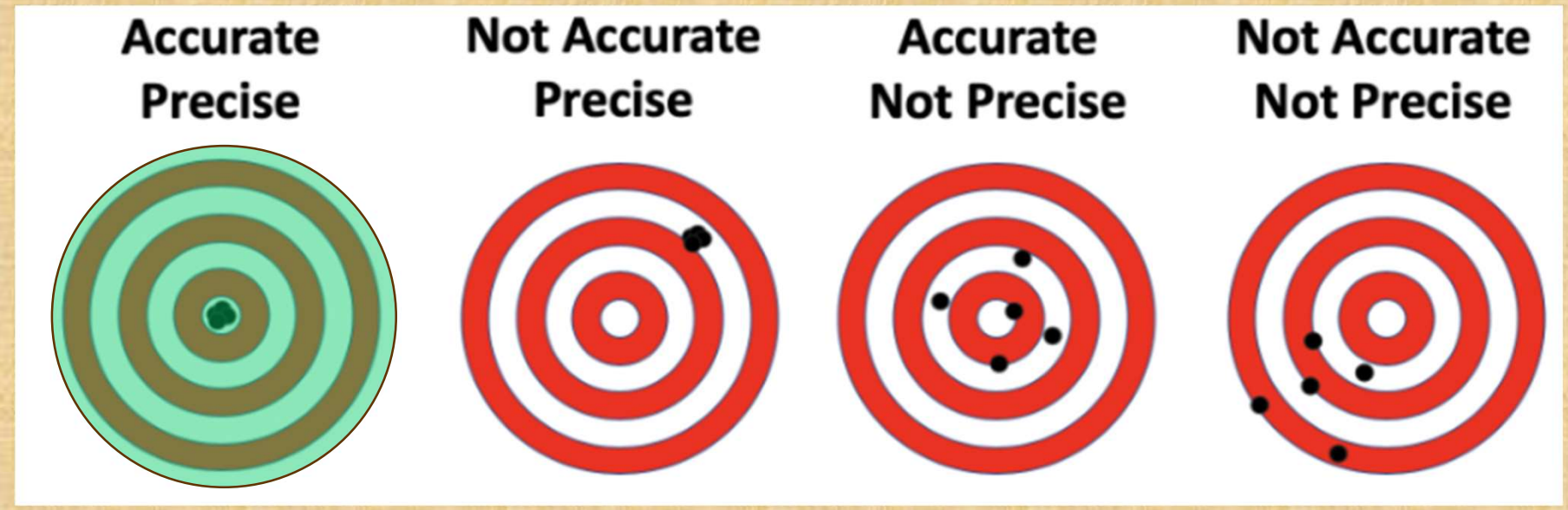
Livestock Nutrition Center
Better Feed, Better Results

Today's Goals

- Targeted nutritional strategies to enhance sustainable **profit potential**
- "Fill the Gaps"
- Targeted Supplementation
- Leave with a few tools
- Spur further discussion

- **Range & Natural Resource Mgt.**
- **Fetal Dev.; Heifer/Bull Dev.**
- **Creep Feeding**
- **Nutritional Health**
- **Stockers/Feedlot**

Goal?


Accurate
Precise
Not Accurate
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Not Precise

No Universal Recommendation

Most of the time, you are left with: "***Now, what do I do***?"

Why is that?

- "**Successful Ranching**" defined by the individual
- Variance in operations: region; goals (e.g., least-cost feed vs. COG); resources; mind-set; etc…
- **Requires targeted evaluation and consultation**

Targeted supplementation would be easy… *if*

- 365 days of uniform grazing distribution
- Pastures don’t need to rest
- No floods, snow/ice, drought, or wildfires
- Monoculture
- Take ½, leave ½, use ¼
- Single animal class & similar BW
  - growing; gest.; early vs. late lact.; bulls…
- Easy terrain

Why Targeted Supplementation?

- TX grazing lands have steadily decreased since 1997, losing or converting roughly **4.6M acres** to other land uses (20-yr period; TX Land Trends)
- Ever increasing need to **produce *more, with less***
- $15/acre; 2,000 lb./acre available forage

  $60/ton of edible forage

“Fill the Gaps”

- Goal: Balanced diet
- Maximize the supplemental response
- **Deficiencies**
  - Energy and Protein
  - Vit/Minerals
  - Roughage
  - Water: quant./quality
- **Excess**
  - Starch, N, S, P
  - Antagonists:
    - e.g., high S, Fe, ZN, Mo: can reduce Cu availability, reduce immune function, and increase bacterial infections

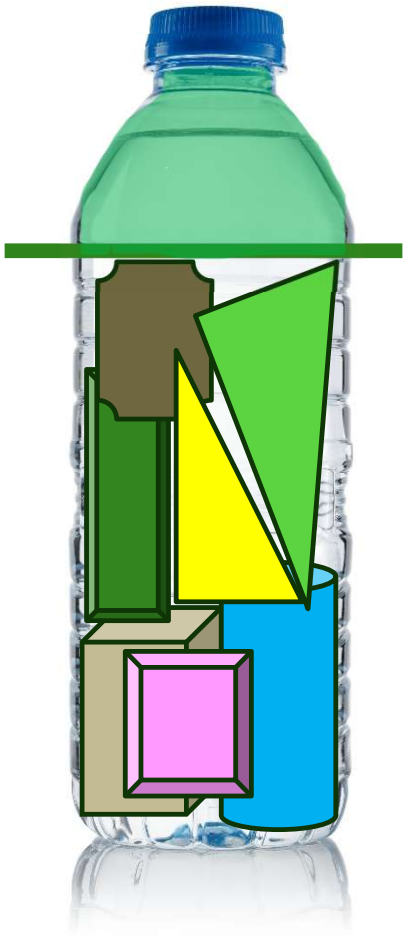
MAX Genetic/Environmental Potential

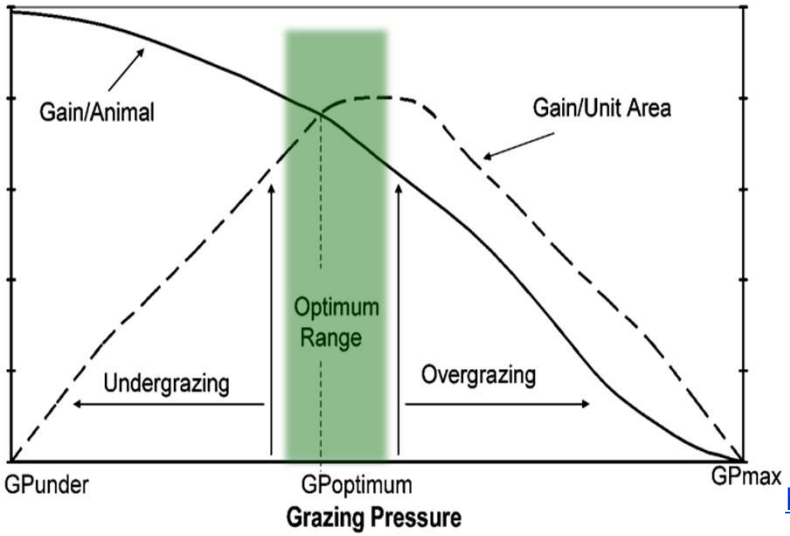
Liebig’s Law of the Minimum

https://agsolutions.com.au/primary-limiting-nutrient-principle

“Fill the Gaps”

- The better quant./qual. of forage you have, the smaller the gap.





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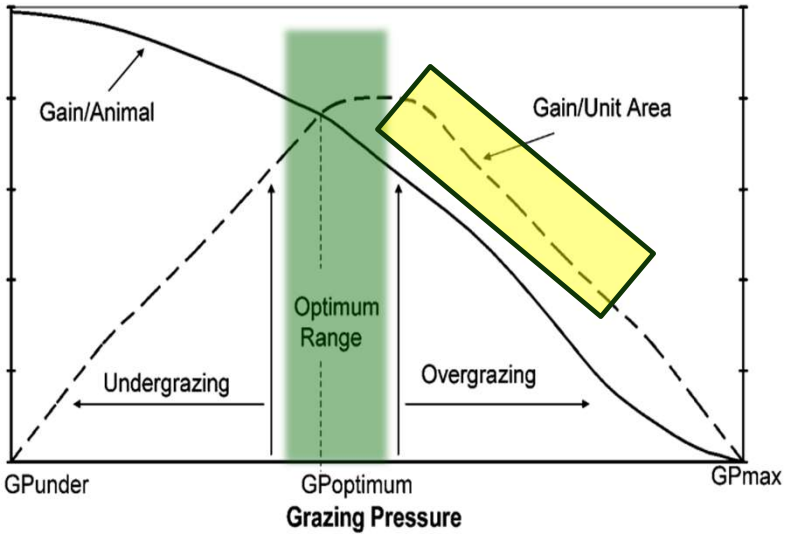

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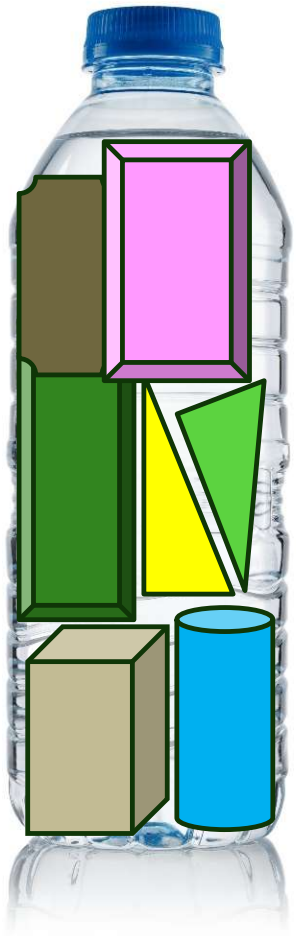
Balanced Diet

- Challenge: there is only so much room



Supplement Type

- Form: straights vs. blend; loose, cube, block, liquid, hay
- Type: energy; protein; mineral; all

Bermudagrass (102 days)

	DDG (%BW/hd per d)		
	0	0.5	1.0
Final BW	928[a]	963[b]	1,016[c]
Gain	163[a]	198[b]	251[c]
ADG	1.64[a]	1.97[b]	2.48[c]
Daily DDG intake	0	4.3	8.8
DDG conversion (G:F)	-	2.18	3.55

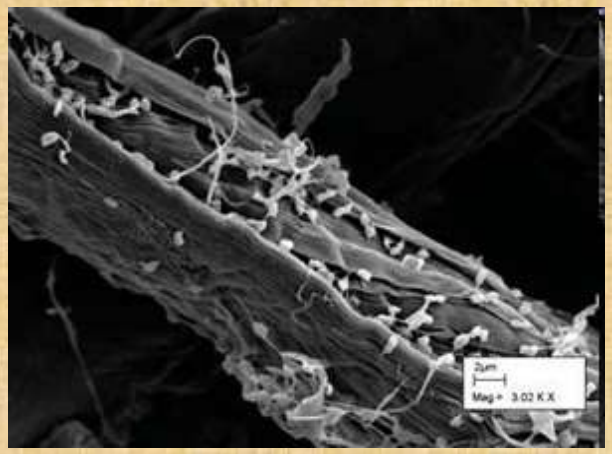
DDGS in Growing Cattle on Grass

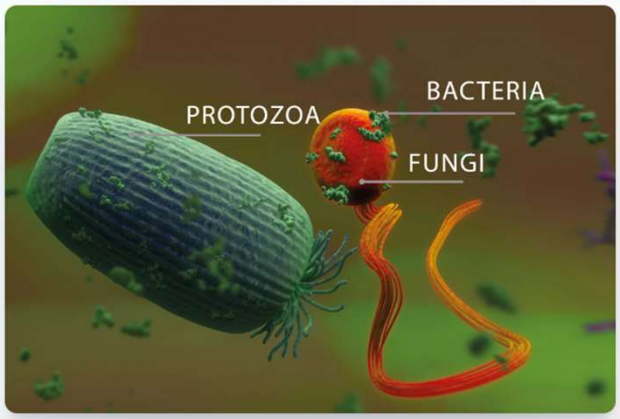
Level of DDG supplementation to 500-lb. calves on grass									
Lbs	0 lb.	1 lb.	2 lb.	3 lb.	4 lb.	5 lb.	6 lb.	L	Q
ADG	1.48	1.72	1.90	2.05	1.96	2.23	2.27	<0.01	0.07

Nutritional Health

Remember, you are feeding the "bugs"

- Issues from: nutrient deficiency or excess





3D representation of the rumen microbes

Targeted Supplementation

Scenario

- Replacement Heifer goal: 65% mature BW by start of breeding season
  - 14 mo old; 750 lbs.
  - BC: 5
- 600 to 700 lb.
- ADG: 2 lbs. Will take 50 days
- Requirements: DMI (14.6 lb., 2.4% of BW); TDN (10.1 lbs.); CP (1.74 lb
- Basal Forage: Dormant Range: TDN (46%); CP (6%)
  - 1.5% of BW (9 lbs. DM)
- Consumes 4.14 lb of TDN an 0.54 lb. CP
- **Deficient**: 5.96 lbs. TDN and 1.2 lbs. CP

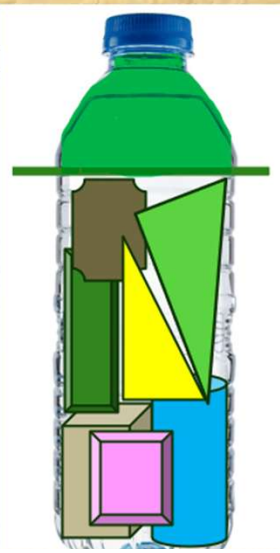


Table 6. Nutrient requirements of growing steer and heifer calves.[1,2]

Animal Description		Dry Matter Intake (DMI)		Diet Nutrient Density						Daily Nutrients per Animal					
Body weight, lb	ADG, lb	DMI, lb/ day	DMI, % of BW	TDN, % DM	NEm, Mcal/ lb	NEg, Mcal/ lb	CP, % DM	Ca, % DM	P, % DM	TDN, lb	NEm, Mcal	NEg, Mcal	CP, lb	Ca, lb	P, lb
1,100 lb at finishing															
300	0.5	7.9	2.6	54	.50	.24	9.2	.30	.16	4.3	3.1	.4	.73	.024	.013
	1.0	8.4	2.8	59	.57	.31	11.4	.46	.23	5.0	3.1	.9	.95	.039	.019
	1.5	8.6	2.9	64	.64	.37	13.6	.62	.29	5.5	3.1	1.4	1.17	.053	.025
	2.0	8.6	2.9	69	.72	.44	16.2	.79	.36	5.9	3.1	1.9	1.39	.068	.031
	2.5	8.5	2.8	75	.81	.52	18.9	.96	.40	6.4	3.1	2.5	1.61	.082	.034
	3.0	8.2	2.7	83	.92	.62	22.2	1.17	.51	6.8	3.1	3.0	1.83	.096	.042
400	0.5	9.8	2.5	54	.50	.24	8.7	.27	.15	5.3	3.8	.5	.85	.026	.015
	1.0	10.4	2.6	59	.57	.31	10.4	.39	.20	6.1	3.8	1.1	1.08	.040	.021
	1.5	10.7	2.7	64	.64	.37	12.1	.50	.24	6.8	3.8	1.7	1.30	.053	.026
	2.0	10.7	2.7	69	.72	.44	14.1	.62	.29	7.4	3.8	2.4	1.51	.066	.031
	2.5	10.6	2.7	75	.81	.52	16.3	.75	.34	8.0	3.8	3.1	1.72	.079	.036
	3.0	10.2	2.6	83	.92	.62	19.0	.90	.41	8.5	3.8	3.7	1.94	.092	.042
500	0.5	11.6	2.3	54	.50	.24	8.4	.25	.15	6.3	4.5	.6	.97	.029	.017
	1.0	12.2	2.4	59	.57	.31	9.8	.34	.18	7.2	4.5	1.3	1.19	.041	.022
	1.5	12.6	2.5	64	.64	.37	11.2	.42	.22	8.1	4.5	2.1	1.41	.054	.027
	2.0	12.7	2.5	69	.72	.44	12.8	.52	.25	8.8	4.5	2.8	1.63	.066	.032
	2.5	12.5	2.5	75	.81	.52	14.7	.62	.30	9.4	4.5	3.6	1.84	.077	.037
	3.0	12.1	2.4	83	.92	.62	16.9	.74	.35	10.0	4.5	4.4	2.05	.089	.042
600	0.5	13.2	2.2	54	.50	.24	8.2	.23	.14	7.1	5.2	.7	1.08	.031	.019
	1.0	14.0	2.3	59	.57	.31	9.4	.30	.17	8.3	5.2	1.5	1.31	.043	.024
	1.5	14.4	2.4	64	.64	.37	10.6	.38	.20	9.2	5.2	2.4	1.53	.054	.028
	2.0	14.6	2.4	69	.72	.44	11.9	.44	.22	10.1	5.2	3.2	1.74	.065	.033
	2.5	14.4	2.4	75	.81	.52	13.6	.52	.26	10.8	5.2	4.1	1.95	.075	.037
	3.0	13.8	2.3	83	.92	.62	15.7	.62	.30	11.5	5.2	5.0	2.17	.086	.041

Targeted Supplementation

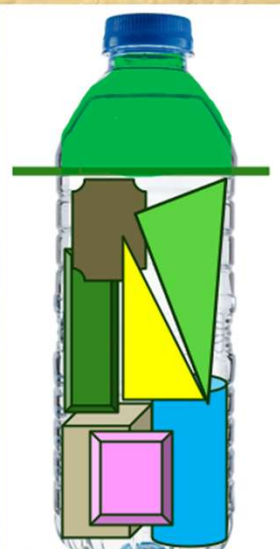
- **Deficient**: 5.96 lbs. TDN and 1.2 lbs. CP

Fill the Gap

- RangeMax 28:8
- TDN: (5.96 lb./0.95)/0.9 = 7 lbs.
- CP: (1.2 lb./0.31)/0.9 = 4.3 lbs

Good forage value: 56 TDN and 10% CP

- Deficient: 5.06 lbs. TDN and 0.84 lbs. CP
- TDN: 5.9 lbs.
- CP: 3 lbs.



Targeted Supplementation

SAVINGS with good forage:

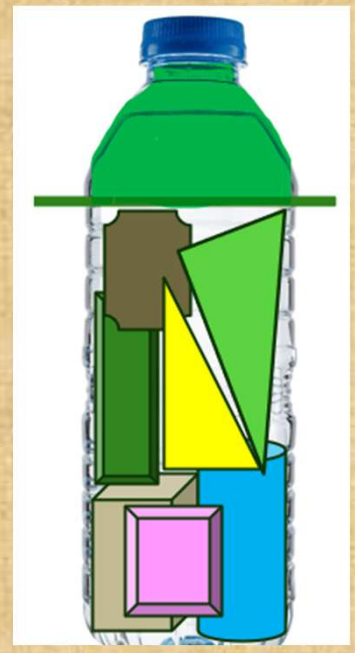
Poor Forage: 7.0 lbs

Good Forage: 5.9 lbs

1.1 lbs./head per day savings

100 head x 90 days x 1.1 lb x $0.19/lb.

$1,880



Date:		Mr. Bojangles Ranchero		
# of head	100			
# of days	100			

	RMax 28:8	20% Cube	37% Cube	Whole CS
$/ton	$380	$420	$550	$295
CP				
Prot, %, as fed	28	20	37	19
$/lb of CP, as-fed	$0.68	$1.05	$0.74	$0.78
CP supplement needed (DM), lb/d	1.2	1.2	1.2	1.2
Feed needed to supply required, as-fed CP/d	4.29	6.00	3.24	6.32
Predicted shrink (storage and feeding on the ground)	0.0	0.0	0.0	10.0
Cost/hd/day to supply CP (with Shrink)	$0.814	$1.260	$0.892	$1.035
Total Cost with Shrink (based on CP)	**$8,143**	**$12,600**	**$8,919**	**$10,351**
$/ton to be comparable to RMax (based on CP)	-	$271	$502	$232
TDN				
TDN, %, as fed	95	80	70	84
$/lb of TDN, as-fed	$0.20	$0.26	$0.39	$0.18
TDN supplement needed (DM), lb/d	5.96	5.96	5.96	5.96
Feed needed to supply required, as-fed, TDN/d	6.3	7.5	8.5	7.1
Cost/hd/day to supply CP (with Shrink)	$1.192	$1.565	$2.341	$1.163
Total Cost with Shrink (based on TDN)	**$11,920**	**$15,645**	**$23,414**	**$11,628**
$/ton to be comparable to RMax (based on TDN)	-	$320	$280	$302

Conclusion

- "**Successful Ranching**" defined by the individual
- Information and education: needed to be precise and accurate
- Goal #1: manage natural resources (forage)
- Goal #2: target supplementation
- Goal #3: evaluate. Re-evaluate
- Maximizing Profit POTENTIAL, requires targeted evaluation and consultation
- Teamwork