Using Concentrate Feeds to Stretch the Hay Supply

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Destocking is usually the best option to avoid overgrazing

With careful management, concentrate feeds can be used to stretch hay supply and maintain beef cows

Current Feed Values

- If corn = $7.15 / bu and SBM = $422 / ton

Item	$/ton equivalent feed value
DDGS	$382
WCS	$345
Corn Gluten Feed	$321
Wheat Middlings	$299
Hominy	$298
Soybean Hulls	$248

Comparative Value of Net Energy, University of Missouri

Limit Feeding Cows

- Provides a home for cows other than pasture, and thus can be used any time of the year, increasing flexibility and stocking capacity
- Maintain core genetics during drought without further damaging rangeland
- Increased diet digestibility 4 - 8%
- Smaller visceral organ mass = lower maintenance energy requirement
  - 79% of NRC (Andresen et al., 2020)
  - 83% of NRC (Briggs et al., 2022)
- Activity in a dry lot decreases 10-20% (CSIRO, 1990)
- Generally enables broader application of technology

  Synchronization, AI, feed additives, limit-feeding, etc.

Limit-Feeding Cows

- Not for everyone
- More intensive management
- Time commitment/daily feeding
- Feed storage
- Feed mixing and feeding equipment
- Dry lot or sacrifice pasture
- Feed bunks

Facilities and Equipment Considerations

- You must be able to control what the cattle eat and how much they eat. Free-choice access to grazing or round bales = loss of control
- Roughage and concentrate portions of ration can be:
  - Fed separately (hay fed at one time or in another pen, concentrate mix in another)
  - Mixed, requiring processed forage and a mixer

This is an older (2007) 600 cubic foot vertical mixing unit designed to process hay, mix and deliver a TMR. PTO powered trailer units are less expensive.


Many ranches have overhead feed storage
KUHN
KNIGHT
3125

Two 25’ by 40’ bays installed in this barn with 20’ outdoor pad.
Original materials cost = $3,000. Maybe $4,500 now?

Commercial hay grinding is more available today and makes sense for small to mid-sized operations.

One company's hay grinding unit passes through our area every two weeks.

Set up fee = $50
Minimum = 35 bales
$8 per bale

Dry Rations

- Not many operations in Oklahoma have access to silage or wet byproduct feeds
- Rations with 8 to 12% moisture are dusty and cattle quickly learn to toss the ration to sift concentrate to bottom of bunk so it can be consumed first
- Liquid molasses products and/or added water can nearly eliminate this problem
- Our ration is 7.5% liquid supplement, then immediately prior to feeding, 25 to 35% water added.

Feeding Management
Cows

- Feeding rate – 1,150 lb mature cow
  - Dry ~ 15 lbs/cow/per day (1 to 1.25% BW) Cost ~ $2.00/day
  - Lactating ~ 20 lbs (1.7% BW) Cost ~ $2.67
- We are feeding 1 x per day
- Feeding time must be consistent
- Adaptation - gestation
  - 5 days with 40:60 hay:TMR @ 2% body weight
  - 5 days with 30:70 hay:TMR @ 1.75% body weight
  - 5 days with 20:80 hay:TMR @ 1.5% body weight

Feeding Management

- Cows = 30 to 36” bunk space, more if calves do not have a creep area
- Feeding calves same diet as cows
  - Andresen (2020); Moore (2022)
- Calves can eat with cows or creep area
  - With free-choice creep, calves will gain 3 lb per day and get fleshy after 90 days
  - Calves 1.25% body weight with ADG ~2.5 lb / day
- Calves can be weaned early

Limit-Fed Diet for Gestating Cows

EXTENSION | **Balancer** | **Cattle** | **Feed List** | **Summary**

Range Cow Research Center	Spring calving cows
Class of cattle:	Mid Gestation, Dry Cow
Formulate on as fed (AF) or dry matter (DM) basis?	AF

Feed Category	Feed or Forage	lb or % AF	% AF	% DM
Harvested Forages	Bermuda Hay, full bloom	32.50	32.57	32.89
Concentrates	Corn Grain, rolled	33.00	33.07	31.92
Concentrates	Distillers Grains with Solubles, corn	33.00	33.07	33.76
Mineral and Vitamins	Vitamin, mineral, and additive premi	0.30	0.30	0.33
Mineral and Vitamins	Limestone 38%	1.00	1.00	1.10
		99.8	100.0	100.0

Cost Per Day	**$ 1.96**	**Feed Intake, lb AF**	**15.0**

Projected ADG, lb	**0.64**	**Feed Intake Ratio**	**0.50**
Desired ADG, lb	**0.28**	Feed Intake, lb DM	13.5
Days to	gain	Predicted Intake, lb DM	27.0
one condition score:	230	DM Intake, % of Body Weight	1.10

Protein Ratio	**1.00**
Ca:P Ratio	**1.5**

Maternal Tissue ADG, lb	0.36	Fetal Tissue ADG, lb	0.28	Milk Yield, lb	#N/A

Nutrient	Diet Concentration As Fed	DM	Required	Daily Amount DM	Required	Status
Diet DM	90%	-	-	-	-	-
TDN	65%	72%	-	9.7 lb	**TDN:CP**	**4.51**
ME, Mcal/lb	1.07	1.18	-	16.0 Mcal	-	-
NEm, Mcal/lb	0.69	0.77	-	10.4 Mcal	-	-
NEg, Mcal/lb	0.44	0.49	-	6.6 Mcal	-	-
NDF	34%	38%	-	1.1 lb	-	-
peNDF	23%	26%	**7 - 20 Min**	3.5 lb	**6.4 pH**	ADEQUATE
Crude Protein	14.4%	16.0%	-	2.16 lb	**2.16 lb**	ADEQUATE
Fat	5.0%	5.5%	-	0.75 lb	-	ADEQUATE
Calcium	0.64%	0.71%	**0.43%**	43.6 g	**26.5 g**	ADEQUATE
Phosphorus	0.42%	0.46%	**0.21%**	28.4 g	**12.6 g**	EXCESSIVE
Sodium	0.08%	0.09%	**0.07%**	5.26 g	**4.30 g**	ADEQUATE
Potassium	0.90%	1.00%	**0.60%**	61.4 g	**36.8 g**	ADEQUATE
Magnesium	0.21%	0.24%	**0.15%**	14.6 g	**7.4 g**	ADEQUATE
Sulfur	0.26%	0.29%	**0.15%**	17.6 g	**9.2 g**	ADEQUATE
Cobalt ppm	0.28	0.31	**.15 ppm**	1.9 mg	**0.9 mg**	EXCESSIVE
Copper ppm	9.41	10.4	**10 ppm**	64 mg	**61 mg**	ADEQUATE
Iron ppm, mg	123.30	136.8	**50 ppm**	840 mg	**307 mg**	EXCESSIVE
Manganese ppm	55.34	61.4	**40 ppm**	377 mg	**245 mg**	ADEQUATE
Selenium ppm	0.36	0.40	**.1 ppm**	2.5 mg	**0.6 mg**	EXCESSIVE
Zinc ppm	40.18	44.6	**30 ppm**	274 mg	**184 mg**	ADEQUATE

	Desired Time on Feed	Desired Final Weight
Initial Weight, lb	1200	1200
Final Weight, lb	1264	1228
Average Weight, lb	1232	1214

Summary

- Using concentrate feeds to stretch forage will not be inexpensive but is one way to retain more cows
- Intensified management is required
- Can be used any time to increase enterprise flexibility