

Using By-Products and Crop Residues to Limit Feed Cows in Confinement

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Credits

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How Stress Impacts Grass Growth



Availability of Grass Reduced

- Chronic Drought Conditions
- More crop production acres
- Urbanization
- Increased value of grass

Availability of Grass Reduced

- Increased Value of Grass
 - Rethinking the utilization of grass
 - High quality grass for gain
 - Residues for maintenance

Confinement Feeding Cows



Limit Feeding Confinement Cows

- Energy dense by products can be mixed with low quality crop residues
- Dry matter intake can be limited
- Cow condition can be maintained

Key Concepts for Limit Feeding Cows in Confinement



Knowing the Nutrient Content of Feedstuffs

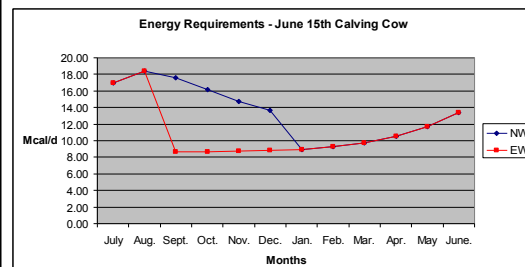


TDN of common by-products and Forages

Ingredient ¹	TDN (%DM)
Corn distillers grains (wet, dry, modified) and solubles	108
Sugar beet pulp	90
Soyhulls	70
Synergy	105
Corn gluten feed	100
Midds	75
Corn	83
Wheat straw/corn stalks	43
Meadow Hay	60

¹Feeding trials reported in NE Beef Report 1987, p.4; '88 p. 34; '93, p. 46; midds data from KSU Research Report

Understanding Nutrient Requirements



Manipulating Diets To Meet Changing Needs of the Cow and Calf



Diet (DM ratio)	Ingredients	Late Gestation Cow	Lactating Cow	Cow with 60 d old calf
Dry matter intake, lb				
57:43	Distillers grains:straw	15.0	18.0	20.0
30:70	Distillers grains:straw	19.2	23.0	25.6
40:20:40	Distillers grains:straw:silage	15.4	18.5	20.6
20:35:45	Distillers grains:straw:beet pulp	14.6	17.5	19.4

Example Diets for Confined Cows Using Beet Pulp

Ingredient*	% DM	Actual lb/ton	% DM	Actual lb/ton
Wheat straw	60	658	35	292
WDGS	20	591	20	424
Beet pulp	20	751	45	1284
Mixture DM, %	49		37	

*Diets had 0.3 lb limestone per cow added to diet

Gestating Cow Performance

Item	20% Pulp	45% Pulp	SE	P value
Initial BW, lb	1202	1196	27.0	0.86
Initial BCS	5.2	5.2	0.13	0.79
Final BW, lb	1307	1310	24.9	0.92
Final BCS	5.6	5.7	0.08	0.20
BW change, lb	105	115	9.9	0.50
BCS change	0.4	0.5	0.12	0.57

Limit Feeding Lactating Cows in Confinement



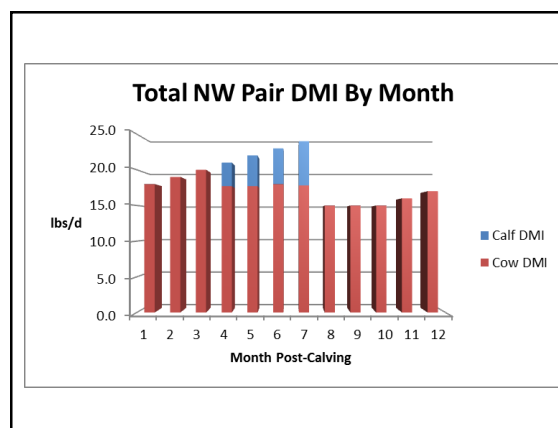
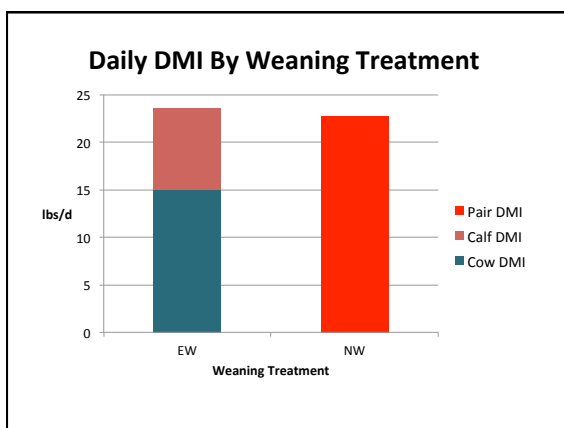
- Lactation diet after 90 days (DM basis)
- 60% Wet Distillers
- 40% Straw/stalks
- Early weaned cows 15 lb DM
- Late weaned pairs 22 lb DM

Performance of cows by location and weaning treatment.							
Item	ARDC		PREC		P-value		
	EW ^a	NW ^b	EW ^a	NW ^b	Weaning	Location	W x L
Cow BW, lb							
Prebreeding	1115	1101	1150	1134	0.56	0.21	0.95
Normal weaning	1129 ^e	1109 ^e	1266 ^f	1165 ^e	0.05	0.01	0.16
Cow BW change, lb	15 ^e	7 ^e	115 ^f	32 ^e	0.01	<0.01	0.02
Cow BCS ^c							
Prebreeding	5.4	5.3	5.0	5.0	0.56	0.06	0.91
Normal weaning	5.1	5.1	5.4	5.1	0.23	0.23	0.34
Cow BCS ^c change	-0.3 ^e	-0.2 ^e	0.3 ^f	0.1 ^f	0.23	<0.01	0.03

^aEW = early weaned at 90 d of age.
^bNW = normal weaned at 205 d of age.
^cBCS on a 1 (emaciated) to 9 (obese) scale.
^dActual weights.

Performance calves by location and weaning treatment.							
Item	ARDC		PREC		P-value		
	EW ^a	NW ^b	EW ^a	NW ^b	Weaning	Location	W x L
Calf BW ^d , lb							
Early weaning	274	276	295	288	0.85	0.23	0.76
Normal weaning	447 ^e	501 ^f	494 ^f	479 ^{e,f}	0.17	0.36	0.03
Calf ADG, lb	1.48 ^e	1.93 ^{f,g}	1.65 ^{f,h}	1.58 ^{e,h}	0.01	0.12	<0.01

^aEW = early weaned at 90 d of age.
^bNW = normal weaned at 205 d of age.
^cBCS on a 1 (emaciated) to 9 (obese) scale.
^dActual weights.



Impact of Early Weaning on Pregnancy Rate	
Treatment	% Pregnant
Early Weaning	90.5
Normal Weaning	88.2

$P = 0.74$

Considerations for Breeding in Confinement	
• Cows may be close to handling facilities	–Incorporating synchronization and AI
• Bulls need 15-18 lb TDN and another 2 ft. of bunk space	



Defining Early Weaning

- Less than 45 days – may benefit the cow
- Less than 180 days – may be a management tool
- May not result in feed energy savings

Pricing TDN

Commodity (\$/as is ton) ^a	Commodity ^b	DM content (%)	Commodity (\$/DM ton)	TDN (%)	Commodity (\$/ton TDN)	Commodity (\$/lb TDN)
100	WDGS ^c	35	286	108	265	.13
110	Wheat straw	88	125	43	291	.15
160	Meadow Hay	88	182	57	319	.16

^a100/.35 = 286, 286/1.08=265, 265/2000=.13

^bIncludes grinding and delivery

^cWet distillers grains

Comparing Diet Cost

Commodity	DM ratio	Amount fed (lb DM)	Total lb fed (DM basis)	Total lb fed (As is basis)	Diet Cost (\$/d)
WDGS:straw	57:43	8.6:6.5	15.1	32.0	1.64
WDGS:straw	30:70	5.8:13.4	19.2	31.8	1.67
Meadow Hay	100	19.2	19.2	21.8	1.74

Our Experience

- Calves learned to eat with their mothers
- Learned what the feed truck was



Management Considerations

- Water
 - Calves learned to drink from trough within a few days of age.
 - No cases of calves dehydrating during summer.
- Bunk space
 - 2 ft/hd (adult cattle) & 1-1.5 ft/hd (calves).
- Pen space
 - 350 – 400 ft²/hd.



Confinement Feeding outside the Feedlot

- Limit feeding on pasture
 - Cattle will continue to consume forage if allowed
 - Pastures could continue to suffer overgrazing
 - Use winter feeding ground, crop ground, pivot corners

Feeding Considerations

- Allow plenty of bunk space (min. of 2 ft/cow)
- Add 0.3 lb limestone for each cow
- Rumensin can be added up to 200 mg/hd/d
- Monitor sulfur and fat levels
- Grind size 3-7 inches for the roughage
- Wheat straw and WDGS have been mixed successfully in a vertical mixer

Custom Feeding Cows in Confinement

- Commercial Feedlots may have empty pens and willing to feed cows or pairs
- Yardages and feed charges vary
- Some feedlots charge a lesser yardage charge but mark up the feed costs some to cover shrink
- The yardage charge may also depend on labor required for cows – feeding vs. also A.I.

Mindset Shift for Limit Feeding Cows in a Feedlot

- Ad libitum vs. Limit Feeding
 - Slick bunks are o.k.
 - The cheapest resources are the best
- Consistency in Feeding Time

Summary

- Energy density is the key to limit feeding
- Lactation increases energy needs considerably
- Consider early weaning options
- Confined calves must be able to reach water and feed
- Limit fed cows need ample bunk space and a consistent feeding routine

