

Using Confinement as a Component in Beef Production Systems

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Why would we ever consider
confining production cows?



Availability of Grass Reduced

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

Interest in Adding Some Confinement Continues

- Producers with limited perennial grass access
- Young Producers Returning to the Operation without capital to invest in more land
- Producers where grass must be intensively managed

Research vs. Production

- First two years research study was total confinement
 - Studied all phases of the production cycle in confinement
- Last three years' research is a systems approach
- Every producer has a unique system and therefore must determine what will work best for any given operation

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 because nutrient needs are being met**

Key Concepts for Limit Feeding Cows in Confinement



Knowing the Nutrient Content of Feedstuffs



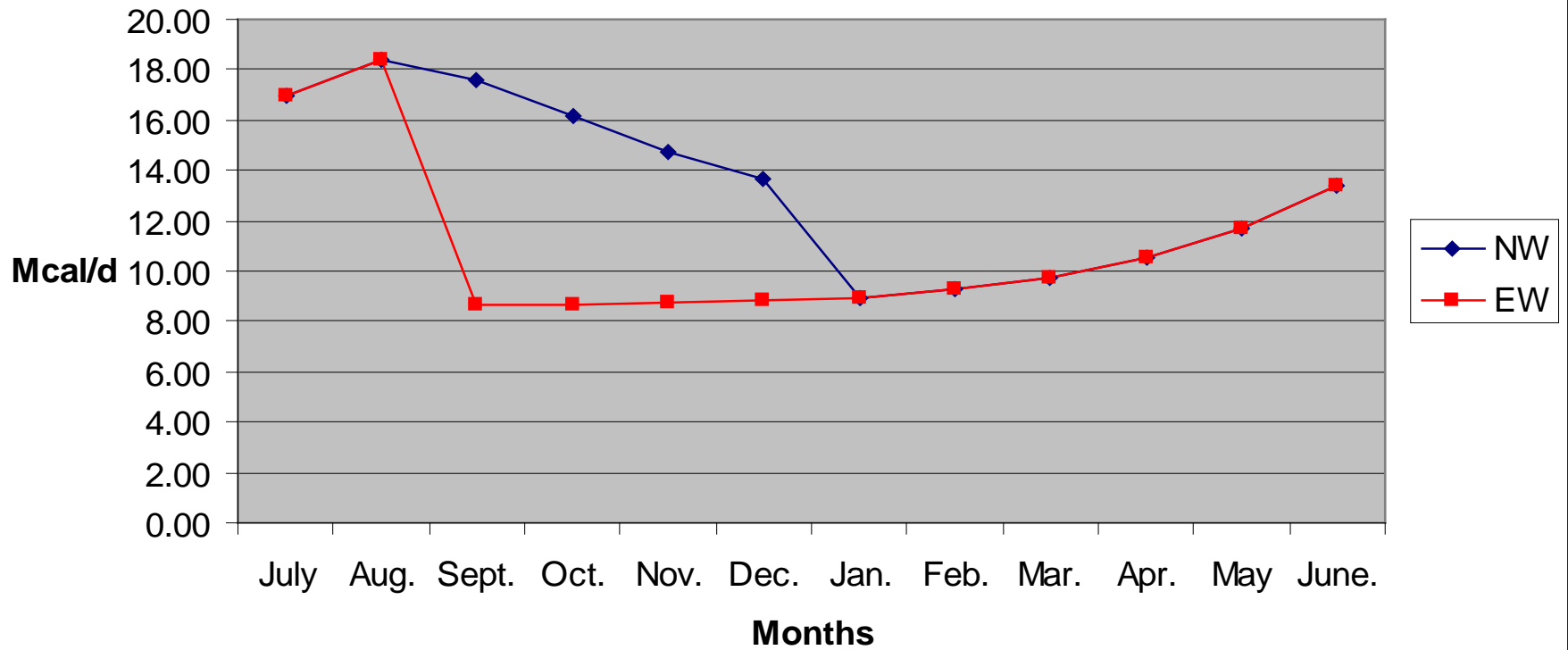
TDN of common by-products and Forages

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	57
1Feeding trials reported in NE Beef Report 1987, p.4; '88 p. 34; '93, p. 46; midds data from KSU Research Report	

Be Aware of Changing Nutrient Requirements



Energy Requirements - June 15th Calving Cow



Accounting for the Dry Matter Intake of the 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







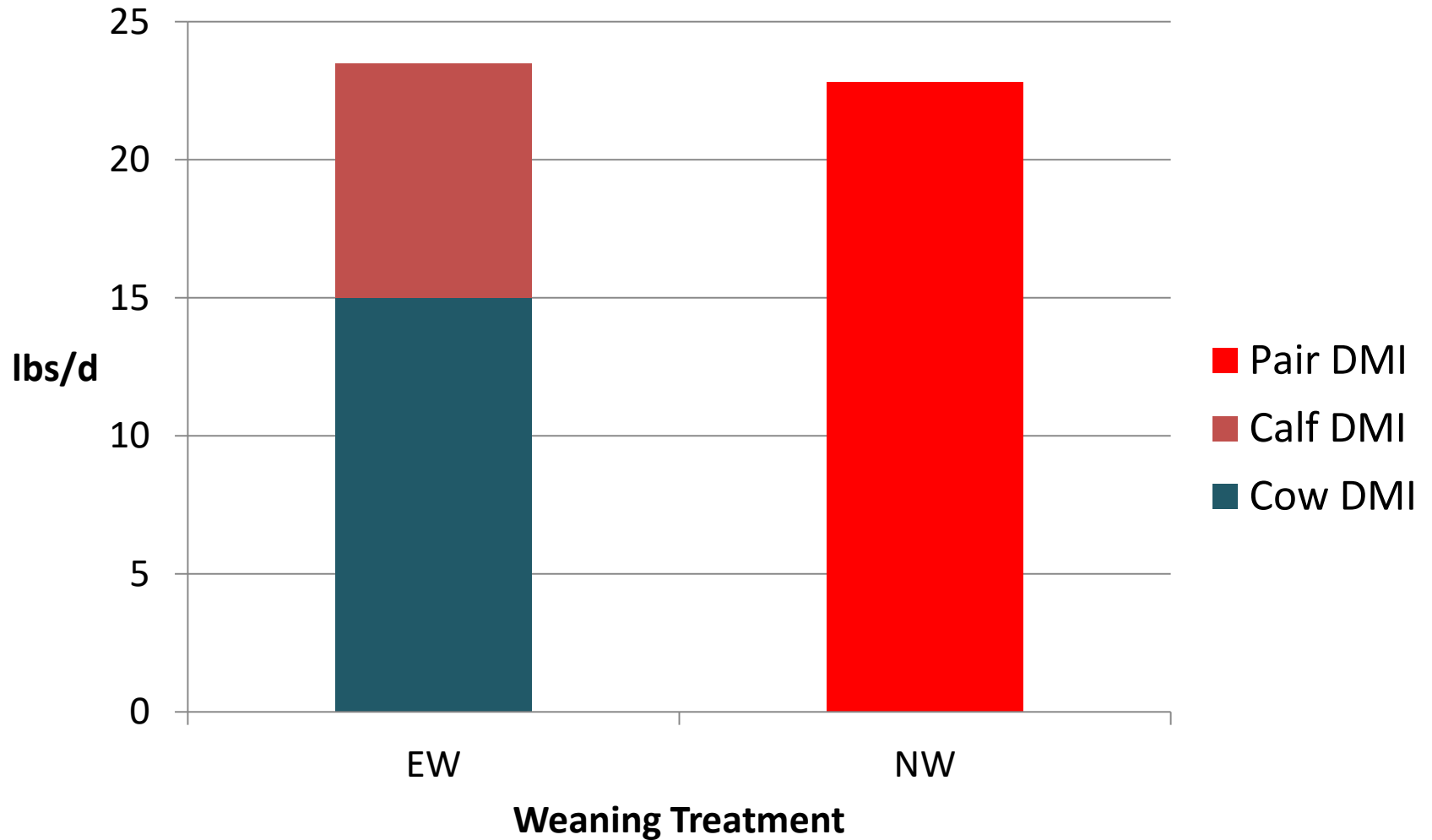
Limit Feeding Lactating Cows in Confinement



- Year 1
- 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

- Year 2
- Lactation diet after 90 days (DM basis)
- 40% Wet Distillers
- 20% Straw/stalks
- 40% Corn silage
- Early weaned cows 15.5 lb DM
- Late weaned pairs 24.9 lb DM

Daily DMI By Weaning Treatment



Lessons Learned from Total Confinement

- Pairs can be maintained in total confinement, although it ***may or may not*** be the least expensive system
- Using the most inexpensive commodities is important
- Limit feeding cows energy dense diets maintains cows - calves may need additional feed resources
- Early weaning may be a useful management tool

Lessons Learned from Total Confinement

- 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.
 - Calves need water for hydration and rumen development.
- 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

Incorporating Some Confinement Feeding Allows for Thinking Outside the Box



Thinking Outside the Box



Thinking Outside the Box



Thinking Outside the Box



Incorporating Confinement

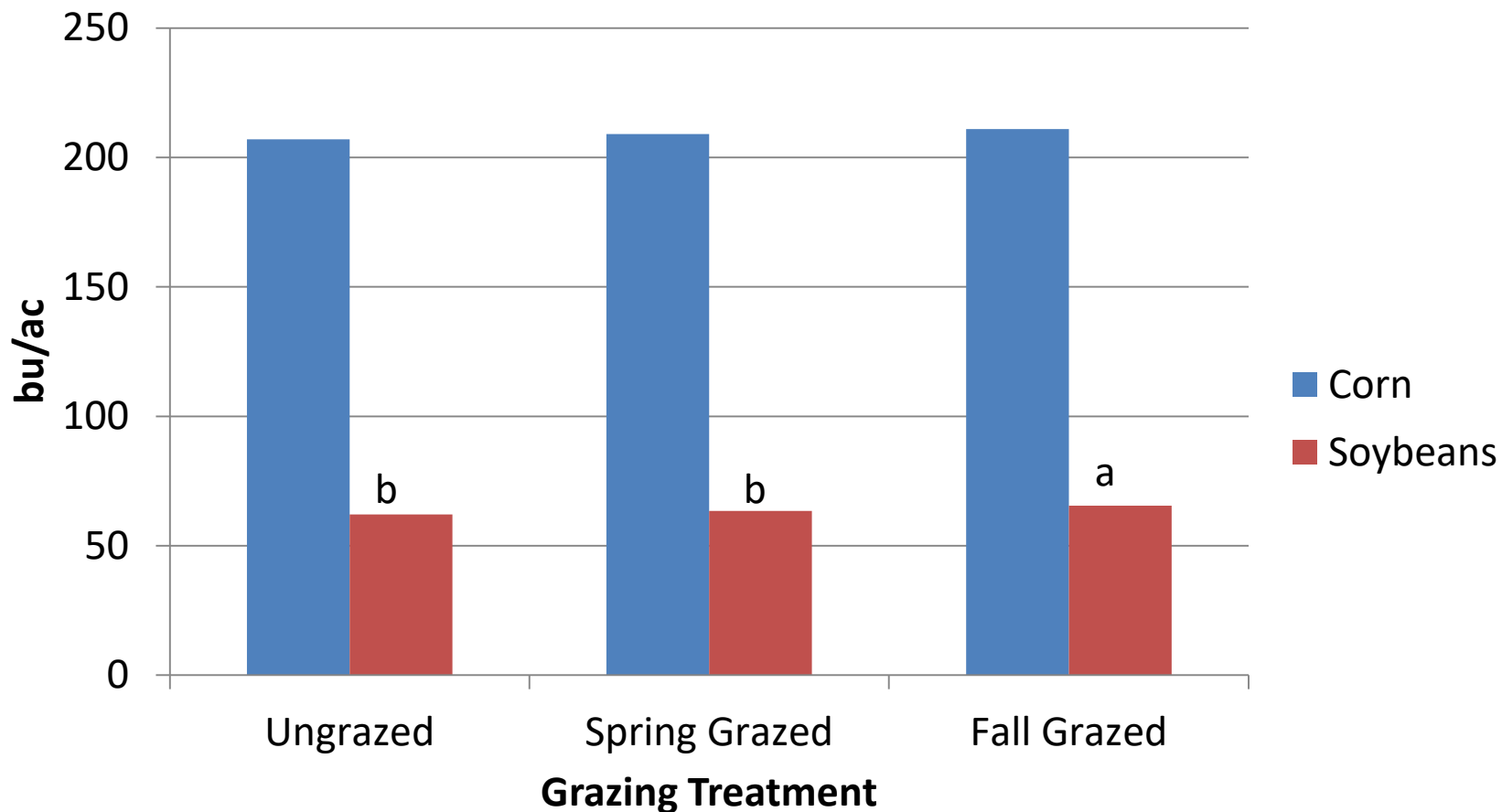
- Every producer has a unique system and various resources and therefore must determine what will work best for any given operation



Nebraska's Most Underutilized Resource

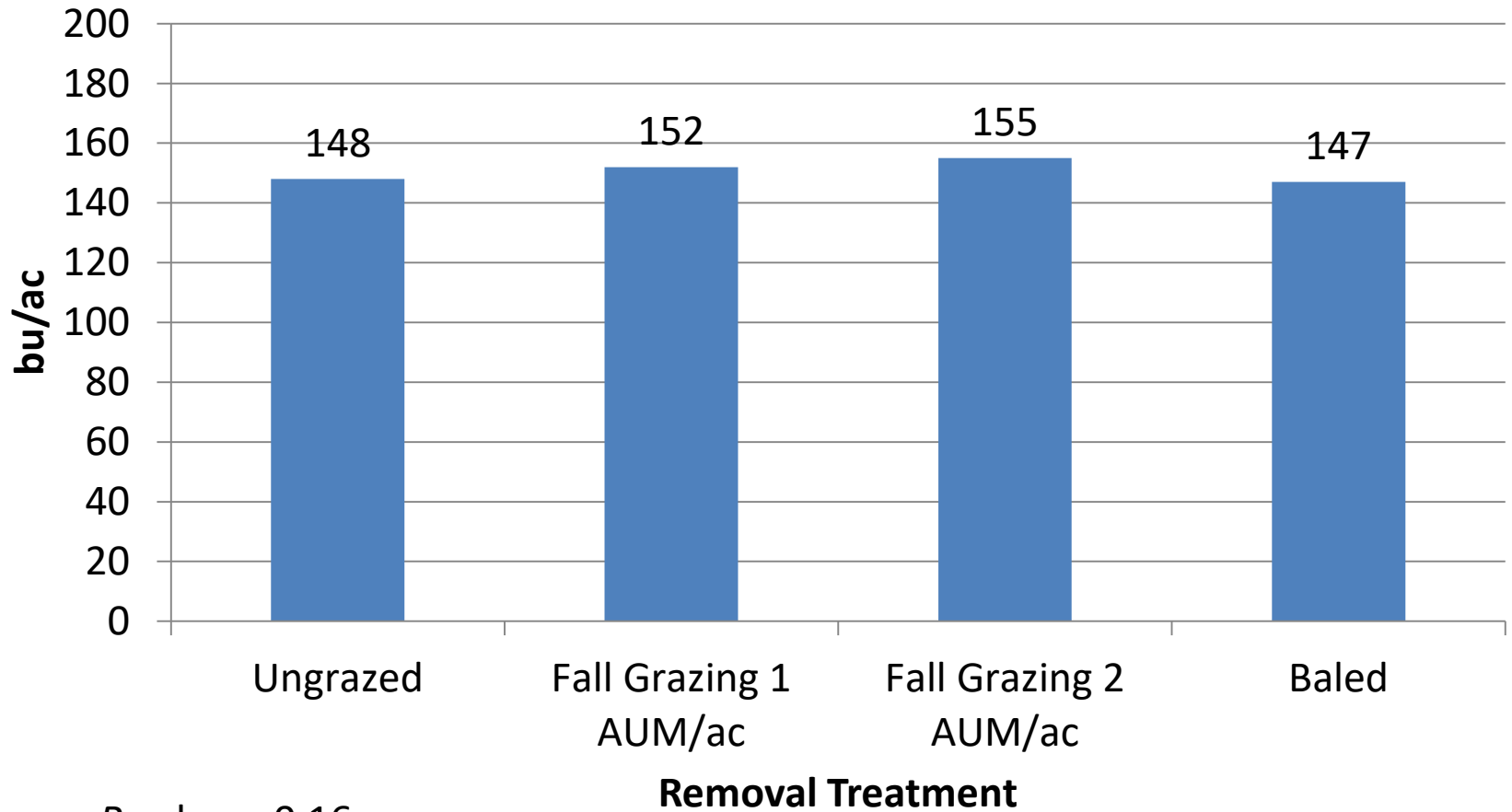


Effect of grazing corn residue in the fall/winter or spring on crop yields (03'-13', Eastern NE)



Drewnoski et al., 2015

Effect of corn residue removal on corn grain yield (09'-13', Western NE)



Drewnoski et al., 2015

Confinement Feeding Cows





Procedures

- Two locations: the Eastern Nebraska Research and Extension Center (ENREC) feedlot and the Panhandle Research and Extension Center (PREC) feedlot
- Seventy-six (n=47 at ENREC; n=29 at PREC) lactating, composite (Red Angus x Red Poll X Tarentaise x South Devon x Devon) beef cows with summer-born calves
- Within location, pairs were blocked by cow BW (ARDC=4; PREC=3 blocks for drylot and 2 blocks for cornstalk grazing), stratified by calf age, and assigned randomly to one of two treatments: 1) dry lot feeding (DL) or 2) cornstalk grazing (CS).

Drylot Diets

Ingredient, %	Location	
	ENREC	PREC
Modified wet distillers grains plus solubles	55.0	
Wet distillers grains plus solubles	—	58.0
Wheat Straw	40.0	40.0
Supplement	5.0	2.0
Calculated Composition		
DM, %	62.4	47.0
CP, %	19.3	18.8
TDN, %	79.1	81.0
NDF, %	54.0	54.9
ADF, %	31.0	21.6
Ca, %	0.79	0.77
P, %	0.52	0.49

¹All values presented on a DM basis

²Supplements included limestone, trace minerals, and vitamin A,D,E premix

Supplement fed to cow-calf pairs on cornstalks^{1,2}.

Ingredient, %	
Dried distillers grains plus solubles	94.51
Limestone	3.50
Pelleting binder	1.88
Vitamin A,D,E	0.11

¹All values presented on a DM basis.

²Fed at **5.2 lb** per pair per day (DM).



Cow Performance in Confinement and Partial Confinement

Item	CS ²	DL ³	SEM	P-value
Cow BW, lb				
Initial	1183	1187	62	0.93
Ending	1121	1322	57	<0.01
Cow BW Change, lb	-64	132	16	<0.01
Cow BCS⁴				
Initial	5.3	5.3	0.3	0.92
Ending	4.6	5.9	0.2	<0.01
Cow BCS change⁴	-0.7	0.5	0.2	<0.01

¹Two years of data from ENREC and 1 year of data from PREC

²CS= pairs wintered on cornstalks

³DL= pairs wintered in drylot

⁴BCS on a 1 (emaciated) to 9 (obese) scale

Calf Gain by Wintering System

Item	CS ²	DL ³	SEM	P-value
Initial age, d ⁴	125	129	5	0.49
Ending age, d ⁵	282	284	3	0.51
Calf BW, lb				
Initial	331	326	9	0.68
Ending	541	642	13	<0.01
Calf ADG, lb	1.33	2.04	0.1	<0.01
BW•d ⁻¹ •age ⁻¹ , lb ⁶	1.96	2.32	0.1	<0.01

¹Two years of data from ENREC and 1 year of data from PREC

²CS= pairs wintered on cornstalks

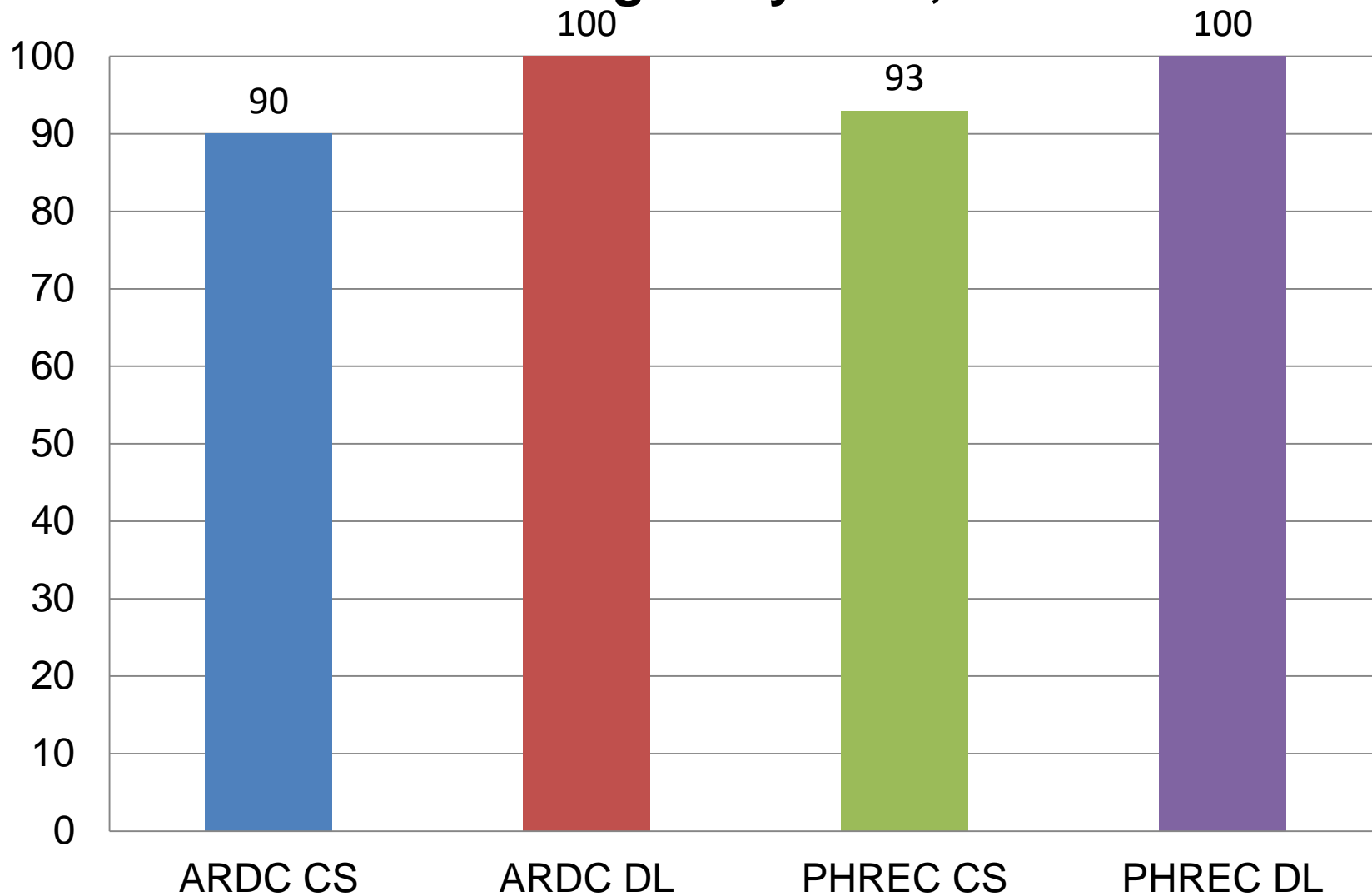
³DL= pairs wintered in drylot

⁴Initial age= age at initiation of cornstalk grazing period

⁵Ending age= age at collecting weights following weaning

⁶Weight per d of age at collecting weights following weaning

Cow Pregnancy Rate, % Year 1



Inputs, \$/pair/day	CS¹	DL²
Cornstalk rent³	0.20	—
Yardage	0.30	0.50
Ration⁴	—	1.66
Supplement⁴	0.37	—
Net cost, \$/pair/day	0.87	2.16
Net cost, \$/pair/wintering season	143.55	356.40
Extra post-weaning feed, \$/pair⁵	16.00	—
Lighter weaning wt, \$/pair⁶	60.00	—
Net change, \$/pair		136.85

¹CS= pairs wintered on cornstalks

²DL= pairs wintered in drylot

³Cornstalk rent = \$12 per acre

⁴Distillers priced at 100% of corn assuming \$3.50 per bu of corn

⁵Cost to feed an additional 3.6 lb. (DM) of ration at \$0.06 per lb. for 75 days to compensate for body condition reduction of cow

⁶The difference in calf value at weaning between treatments; calf price, April 30; \$20/cwt price slide



Summary

- Each producer needs to evaluate their resources and system options to see what might work best
- As prices change systems should be re-evaluated
- Systems including partial confinement may be economically viable alternatives to grass systems



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