

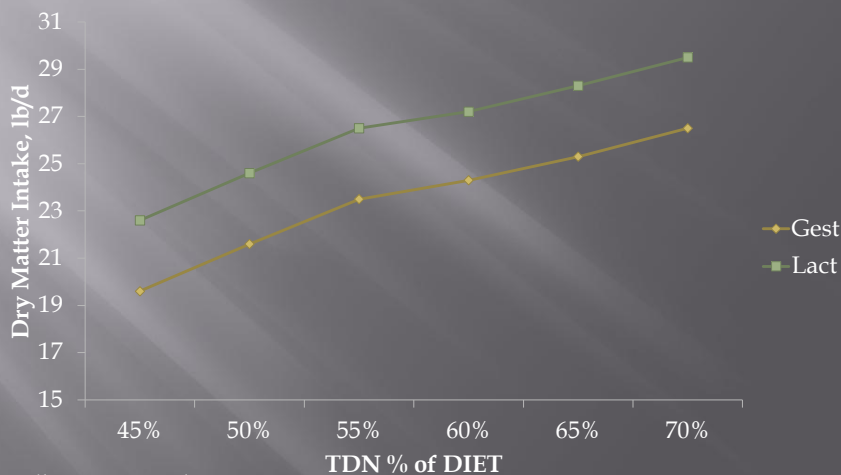
STRETCHING YOUR HAY WITH CROP RESIDUES & BY- PRODUCT FEEDS

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1. Determine what cattle need, NOT what we want to provide them

1,200 lb mature cow	TDN (lbs/d)	CP (lbs/d)
Maintenance Requirement		
Mid-gestation	10.8	1.5
Late gestation	12.6	1.9
Early lactation	15.3	2.6
Mid-lactation	13.8	2.1

2. Estimate how much they will eat



1,200 lb cow example.

3. Examine feed options

Feedstuff	DM	CP	ADF	NDF	TDN
Sugarcane (2 samples)	50	2.1	64.3	82.0	?
Sugarcane bagasse (dairyone)	94	2.9	62.4	80.2	48.3
Sugarcane bagasse (dairyone)	68	3.9	62.2	75.2	42.4
Rice hay	87	11.4	46.7	69.4	50.4
Milo (3 samples)	93	4.8	37.3	66.3	60.8
Corn stalks (7 samples)	91	6.9	51.6	81	48
Rice mill feed (book value)	91	6.8	50	60	42
Rice bran	91	14.7	17	28	83
Hominy feed (57% starch)	89	10.2	5.6	16.8	86
Broiler litter (421 samples, AR)	78	23.3	26.6	38.9	49.4
Avg quality bermudagrass hay (6,676 samples, AR)	88	13.1	32.7	71.4	58.0

4. How does each option balance independently

	Expected DMI	TDN Balance	CP Balance
Sugarcane bagasse - dry (dairyone)	21	-2.5	-1.3
Rice hay	21	-2.1	0.5
Milo (3 samples)	24	1.7	-0.8
Corn stalks (7 samples)	21	-2.5	-0.5
Rice mill feed (book value)	18	-5.0	-0.7
Rice bran	25	8.2	1.8
Hominy feed (57% starch)	26	9.8	0.7
Broiler litter (421 samples, AR)	21	-2.3	3.0
Avg quality bermudagrass hay (6,676 samples, AR)	23	0.7	1.1

Gestation requirement of 12.6 lb TDN and 1.9 lb CP

4. How does each option balance independently

	Expected DMI	TDN Balance	CP Balance
Sugarcane bagasse - dry (dairyone)	25	-3.3	-1.9
Rice hay	25	-2.8	0.3
Milo (3 samples)	27	1.2	-1.3
Corn stalks (7 samples)	25	-3.3	-0.9
Rice mill feed (book value)	22	-6.1	-1.1
Rice bran	30	9.6	1.8
Hominy feed (57% starch)	30	10.5	0.5
Broiler litter (421 samples, AR)	25	-3.1	3.2
Avg quality bermudagrass hay (6,676 samples, AR)	27	0.4	0.9

Lactation requirement of 15.3 lb TDN and 2.6 lb CP

5. Fill the gaps

	% Intake	% TDN	Prop.TDN	%CP	Prop.CP
C. Stalks	33	48	15.8	6.9	2.3
Cane	33	48	15.8	2.1	0.7
Litter	34	49	16.7	23.3	7.9
	100		48.3		10.9
Summary					
Intake	20		9.7		1.1
Gest. Req			12.6		1.9
Diff			-2.9		-0.8

75% of TDN Req Met

56% of CP Req Met

5. Fill the gaps

	% Intake	% TDN	Prop.TDN	%CP	Prop.CP
RB	15	83	12.5	14.7	2.2
litter	75	50	37.5	23.3	17.5
hay	10	58	5.8	13.1	1.3
	100		55.8		21.0
Summary					
Intake	23		12.8		2.7
Gest. Req			12.6		1.9
Diff			0.2		0.8

5. Fill the gaps

	% Intake	% TDN	Prop.TDN	%CP	Prop.CP
CGF	35	80	28.0	24	8.4
Cane	40	48	19.2	2.9	1.2
hay	25	58	14.5	13.1	3.3
	100		61.7		12.8
Summary					
Intake	24		14.8		1.9
Gest. Req			12.6		1.9
Diff			2.2		0.0

5. Fill the gaps

	% Intake	% TDN	Prop.TDN	%CP	Prop.CP
CGF	40	80	32.0	24	9.6
Cane	40	48	19.2	2.9	1.2
hay	20	58	11.6	13.1	2.6
	100		62.8		13.4
Summary					
Intake	29		18.2		2.4
Lact. Req			15.3		2.6
Diff			2.9		-0.2

Great tool for mature cows

Cowculator v2.0

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Developed at
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Conditions

Today's date: 9/7/2011
Ranch or producer name: Cowboy Ranch
Address, phone, e-mail:
Situation: Mature cows - lactating requirements

Management and Stage

Number of cows: 50 Avg. Breeding date:
Average calving date: 2/1/2010 4/24/2009
Weaning date: 10/5/2010
Stage of production: 3

Code	Stage	Corresponding dates	Days
1	Mid Gestation, dry	10/5/2009 to 11/13/2009	39
2	Late Gestation, dry	11/13/2009 to 2/1/2010	80
3	Early Lactation	2/1/2010 to 5/2/2010	90
4	Late Lactation	5/2/2010 to 10/5/2010	156

Feeding Period

From: 11/1/2009
To: 2/1/2010
Days in feeding period: 92

<http://www.aragriculture.org/livestock/beef/nutrition/spreadsheets/default.htm>

Use caution when choosing feedstuffs

- Nitrates
 - Corn stalks (extension quick test = blue to black is high nitrate)
 - SWREC range (292 to 1,300) < 750 safe, >1,400 dangerous
- Crop residues
 - Rice straw: on our do not use list
 - High silica, very poor digestibility
 - Chemical residues
 - Gin trash
 - Chemical residues

Use caution when choosing feedstuffs

- Roughage type Hulls
 - Cottonseed hulls, good but expensive
 - Rice hulls, bad but inexpensive (max 15% diet DM)
 - Peanut hulls, be cautious with aflatoxin

None of these will meet beef cow requirements without supplementation

Use caution when choosing feedstuffs

- Mycotoxins
 - Corn (aflatoxin) –
 - 100 ppb max in total ration for breeding cattle
 - 300 ppb max in total ration for finishing cattle
 - DDGS (vomitoxin) –
 - 10 ppm max in total ration for beef cattle > 4 mo

Avoid adding multiple contaminated ingredients to the ration.

Use caution when choosing feedstuffs

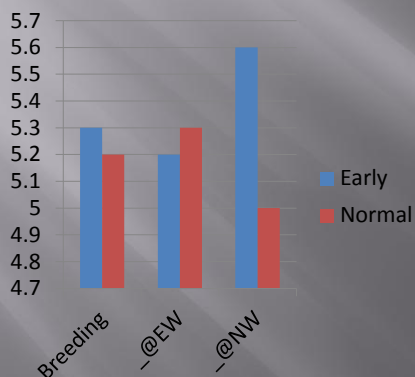
- Litter feeding
 - Limit to 50% of diet 30 d prior to calving to reduce risk of milk fever
 - Litter amendments – limited research
 - Aluminum sulfate (Alum) – 2 studies, 50% litter diets
 - Sodium bisulfate (PLT) – no studies, preservative
 - Deficiencies
 - Sodium (salt), vitamin A
 - Toxicities
 - Mineral content above maximum tolerable level
 - Microbial contamination (deep stack through heat)

Additional considerations

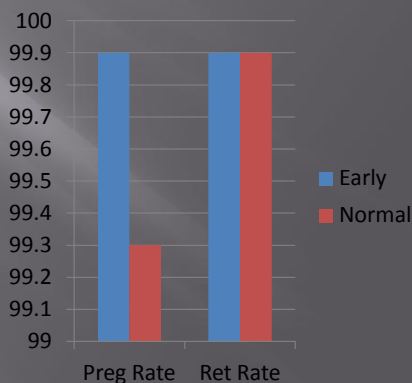
- General dietary concerns
 - High concentrate diets will need calcium balanced at least 1:1 with phosphorus
 - Long term hay, concentrate, and litter feeding should include adequate Vitamin A supplementation
 - Control dust – water, liquid feed
- Rumensin
 - Approved for mature beef cattle. Increase feed efficiency (10%).

Early weaning

BODY CONDITION



REPRODUCTION



Richter, H.A. 2009. MS Thesis, SDSU.

2005-2008, 123 vs 214 d weaning, 90 d breeding season, 57% greater forage disappearance w/ normal weaning

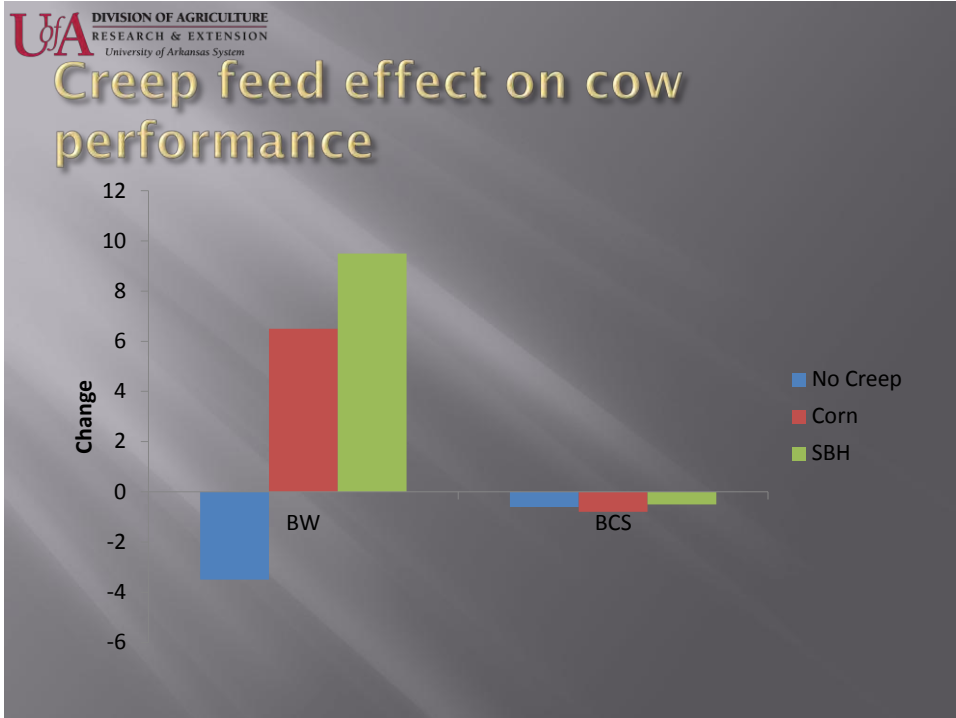
Creep feeding

	No Creep	Corn Creep	Soybean hull Creep
Creep Intake, lb/d	0	3	3.2
ADG, lb	1.1	1.7	1.7
Final Weight, lbs	412	475	484
Creep Conversion, F:G		5.0	5.3

AR Anim Sci, 2009

Creep began 90d pre-weaning

Dry summer, hay feeding prior to weaning



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Minimize hay feeding waste

Hay Feeding Method	Observed Hay Waste
UNPROTECTED	39%, 28%, 42%
Processed - in tire feeders	< 1%
Processed - fed on the ground	< unrolled
Ring feeders	6%, 13%
Cradle/wagon feeders	15%, 11%
Unrolling	>=ring feeder, 24%

Limit-fed hay: restricting time not quantity

	Free Choice	3 hr	6hr	9hr
Exp. 1				
DM intake, lb	20.7	11.9	18.7	20.0
Hay waste, lb	13	6	6	9
Exp. 2				
DM intake, lb	23.8		19.6	22.4
BW Change, lb	167		141	158
BCS Change	0.7		0.4	0.6

Late gestation, 87-89 days feeding 15-17% CP and 60-62% TDN
Miller et al., 2007 PAS

Programmed feeding

Study	Diet	Intake (lb/cow, d)
Driedger & Loerch, 1999	69% hay, 15% corn, 16% suppl.	21
	12% hay, 64% corn, 24% suppl.	15
Schoonmaker et al., 2003	100% hay	34
	20% hay, 70% corn, 10% suppl.	18
Gunter et al., 2000	92% Hay+ 8% CGF suppl.	26
	70% corn, 20% CSH, 10% suppl	11
	78% CGF, 20% CSH, 2% suppl.	13
Radunz et al., 2010	100% Hay	27
	25% hay, 63% corn, 12% suppl.	18
	29% hay, 57% ddgs, 14% suppl.	16
		56%

Additional resources

- <http://www.dairyone.com/Forage/FeedComp/default.asp>
- <http://www.aragriculture.org/livestock/beef/nutrition/default.htm>
- <http://agebb.missouri.edu/dairy/byprod/bplist.asp>
- <http://www.aragriculture.org/livestock/drought/default.htm>
- <http://www.aragriculture.org/livestock/news/default.htm>
- <http://vimeo.com/user2572116>