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Importance of Cow Nutrition Post Calving

Post Rock District
Central Kansas District
Midway District
Cottonwood District
River Valley District

Feb 11, 2021

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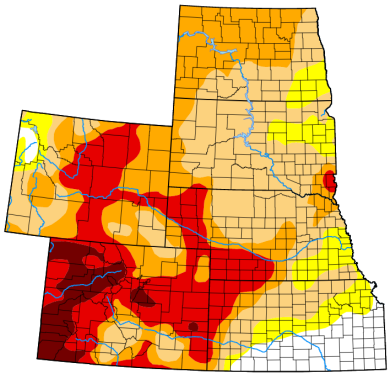
Today's Situation



Map released: Thurs. February 4, 2021

Data valid: February 2, 2021 at 7 a.m. EST

Intensity:

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Author(s):

Brad Rippey, U.S. Department of Agriculture

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Map Download

No text:

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Kansas Drought*

- 1 out of 5 years in eastern Kansas
- 1 out of 3 years in western Kansas

* Years with less than two-thirds average annual precipitation

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Forage Supplies

Summer Forage Production	Winter Situation
Shortage	Harsh Normal
Abundant	Harsh Normal

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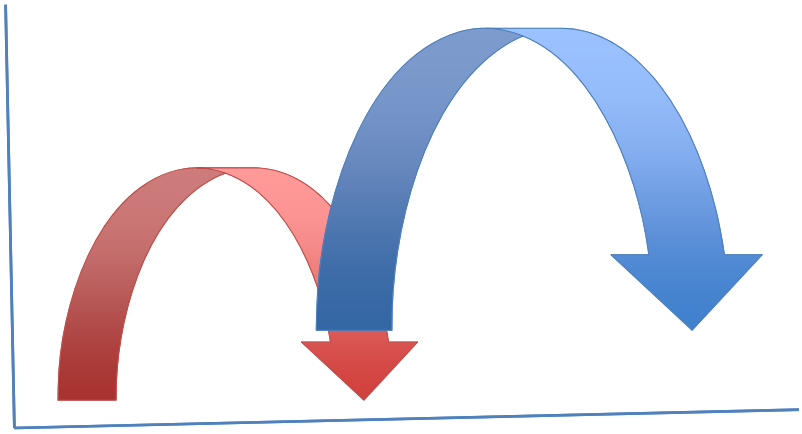
Delayed, but predictable 6 month impacts



Summer 2020 Calving 2021 Breeding 2021

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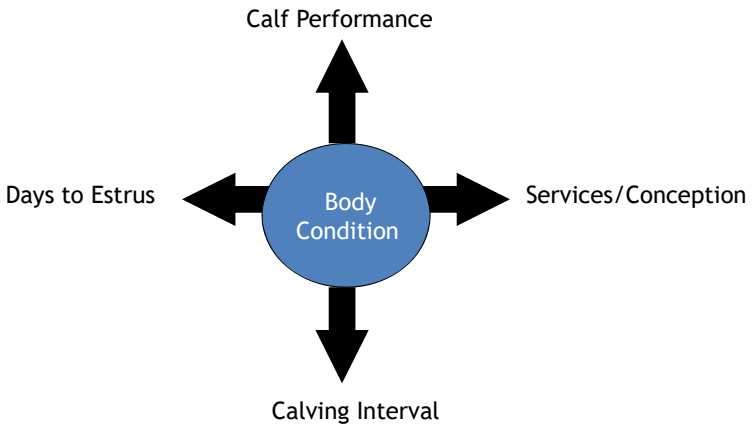
Body Condition



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Factors Affecting an Animal's TNZ

- Body Insulation (fat, hair, etc.)
- Solar and ground radiation
- Plane of nutrition
- Exercise or activity

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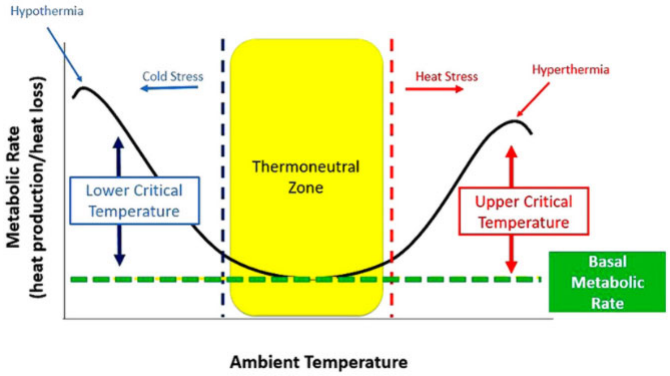
Winter Weather Conditions



Temperature, wind speed, solar/ground radiation, precipitation

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Lower Critical Temperatures for Cattle

Hair Coat Status	Wind Chill Temp**
Dry, Heavy winter coat	18 deg F
Dry, Winter coat	32 deg F

10 -15% extra energy is needed for each 10 deg F below LCT

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Magnitude of Cold Stress

- Difference between an animal's LCT and the environments effective ambient temperature (or wind chill).

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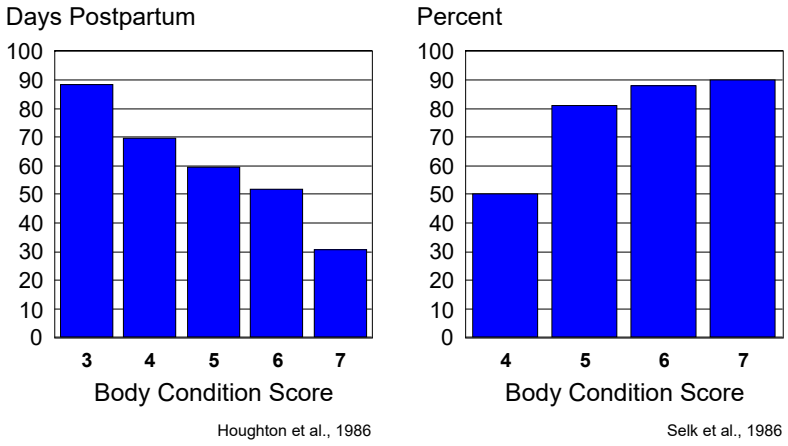
Effect of BCS at Calving on Postpartum Interval and Preg.%



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Effect of BCS at Calving on Calf Vigor and Colostrum Quality

Item	2	3	4	5	6
Interval, calving to standing, min	- -	60	64	43	35
Colostrum production, liters/day	750	1525	1111	1410	- -
Calf serum IgG1, mg/dl	1788	1998	2179	2309	2349
Calf serum IgM, mg/dl	159	146	157	193	304

Colorado State, 1986

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Predicted number of days (d) from calving to first heat as affected by BCS at Calving and BCS change after calving in two-year-old beef cows

Body Condition Score Change in 90 Days After Calving

Condition score at calving	-1	-.5	0	+.5	+1.0	+1.5	+2.0
BCS = 3	189 d	173 d	160 d	150 d	143 d	139 d	139 d
BCS = 4	161 d	145 d	131 d	121 d	115 d	111 d	111 d
BCS = 5	133 d	116 d	103 d	93 d	86 d	83 d	82 d
BCS = 5.5	118 d	102 d	89 d	79 d	72 d	69 d	66 d

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Lalman et al., 1997

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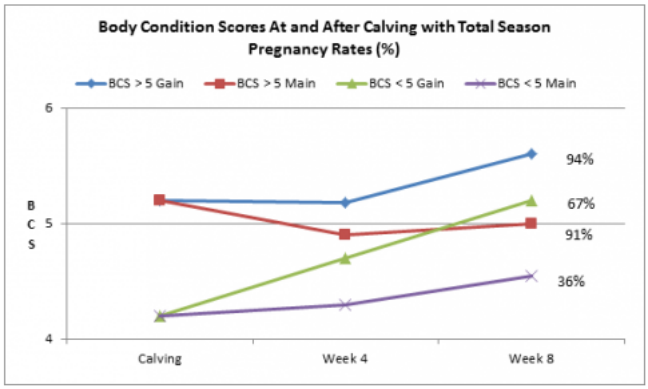
Post-calving body condition change of heifers with body condition >5 or <5 at calving and fed to gain or maintain weight



Bell et al., 1990

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Cow Size and Milk Production

- Primary factors influencing productivity and hence:

  Energy requirements of beef cows

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Nutrient Requirements of the Breeding Herd

Stage Production	Daily Gain	Crude Protein,%	TDN,%
Replacement hfr.	1.5	11	69
Bred yearling hfr.	1.0	9	56
Dry mature cow			
Mid-gestation	.2	7	49
Late-gestation	.8	8	54
Avg. milking cow	0	10	56
High milking cow	0	12	65

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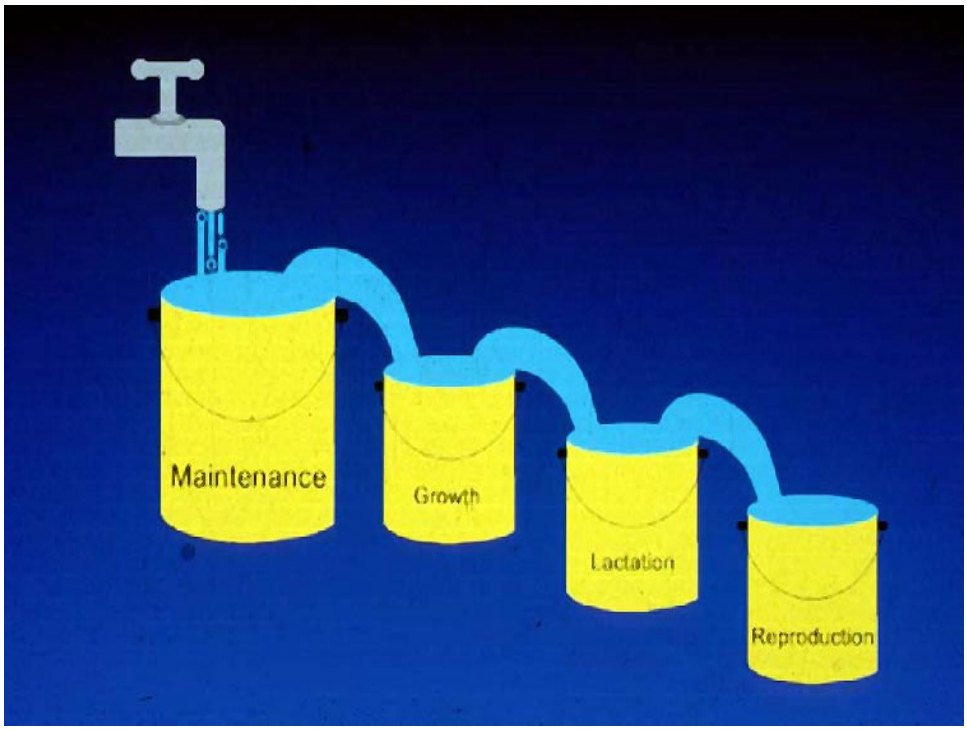

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Stretching your existing forage supplies

1. **Assess your forage supply and alternatives**
- Inventory the number of bales on hand by type and quality

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Stretching your existing forage supplies

1. Assess your forage supply and alternatives
2. **Feed test !!!**

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Stretching Your Existing Forage Supplies

- Minimize water and feed needs
  - ~~Cull non- and poor-producing cows~~
  - Feed cows according to body condition and stage of production
  - Substitute grain for forage…. Questionable ????
  - Reduce feed wastage
  - ~~Early wean calves from young/thin cows~~
  - Drylot young/thin cows

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Segregate Each Lot as It Is Harvested and Stored

- When segregating by quality, a better job can be done nutritionally by feeding according to specific animal production requirements
  - i.e. Identity preservation
- This will greatly facilitate access so that it may be retrieved as needed and used in an appropriate manner.

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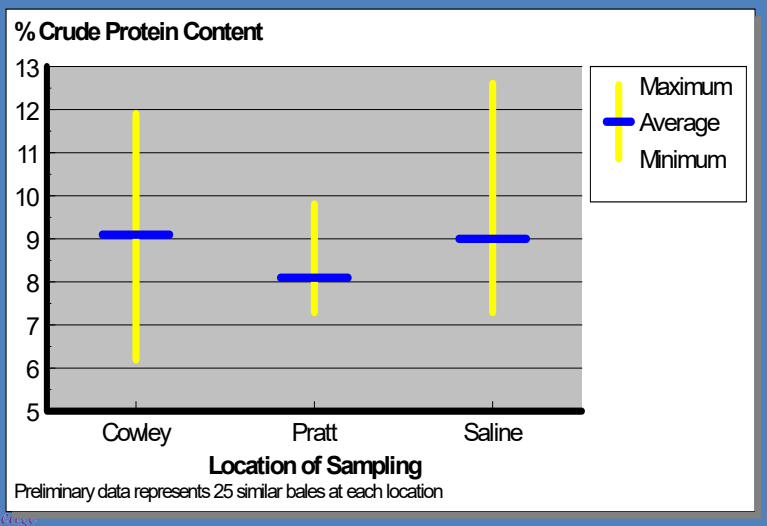
Variation in Crude Protein Content of Cane Hay - Preliminary Results



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Nitrate Variation in Sudan Hay Bales From the Same Field – C. Garten, Saline Co. 1989

- Nitrate content of 23 bales collected from the same field averaged 2,764 ppm but varied from 1,525 to 6,250 ppm on an as-fed basis
- Thus, the nitrate level in individual bales varied more than TWO – FOLD from the average.

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Nitrate Toxicity - Symptoms

- Bluish color of mucous membranes
- Labored breathing
- Muscular tremors
- Swaggering gait
- Eventual collapse

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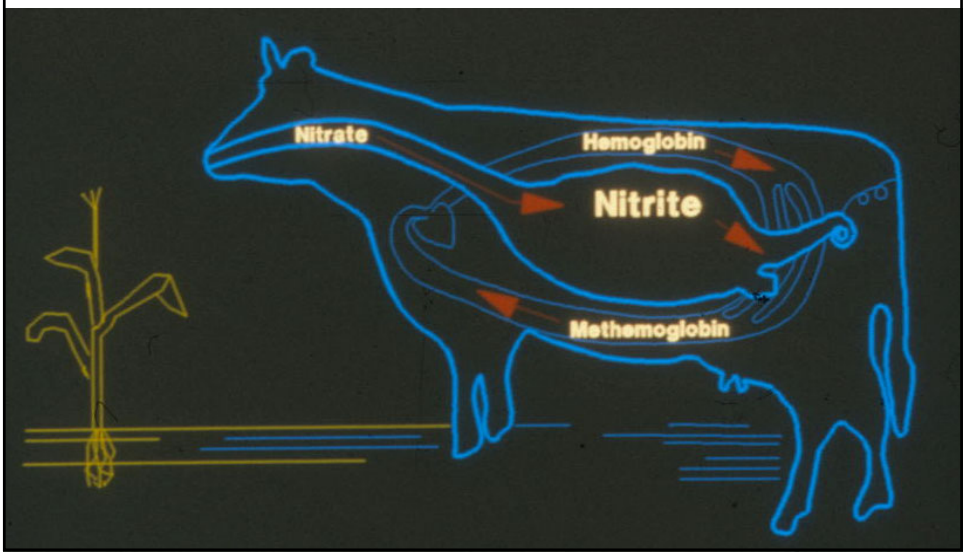
Methemoglobin Formation



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Appearance of Nitrate Toxicity Symptoms

- Nitrate concentration
- Condition of animal
- Rate of intake
- Total amount consumed
- Acute poisoning = .5 to 4 hours
- Under some conditions, clinical conditions may not be apparent for 5 to 8 days

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Stretching your existing forage supplies

1. **Assess your forage supply and alternatives**
2. **Feed test !!!**
3. **Reduce forage wastage**

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Large Round Bale Wastage

Feeding Method

Forage Type	Proc/bunk*	Proc/ground*	Unrolled	LSD
Wheat hay				
% refused/wasted				
Average	8	13	23	9.5
Range	3 - 12	5 - 20	10 - 32	
Lb forage DM/head	22.3	21.2	24.6	
Hybrid sudan hay				
% refused/wasted				
Average	11	16	22	11.0
Range	7 - 15	7 - 31	10 -31	
Lb forage DM/head	20.1	20.8	19.9	

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Proc/bunk and Proc/ground = hay fed with BP25 forage processor

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Hay Feeder Design can Reduce Hay Waste and Cost (OSU, 2011)


Modified Cone Ring


Sheeted Bottom Steel Ring


Open Bottom Ring


Polyethylene Pipe Ring

Item	CONE	SHEET	RING	POLY
Waste, % bale wt	5.3 a	13.0 b	20.5 c	21.0 c
Total waste, lb*	63.6 a	156 b	246 c	252 c
Cost of waste/bale	$3.71	$9.10	$14.35	$14.70
Cost of wasted hay per month	$111.30	$273.00	$430.50	$441.00
Cost of wasted hay per season*	$667.80	$1,638.00	$2,583.00	$2,646.00

CONE = Modified cone; SHEET = Sheeted – bottom steel ring; RING = open bottomed steel ring; POLY = Polyethylene pipe

a,b,c Means within row with uncommon superscripts differ (P<.05)

Assuming $70 per 1,200 lb bale, feeding 180 bales per season (30 cows for 6 month period)

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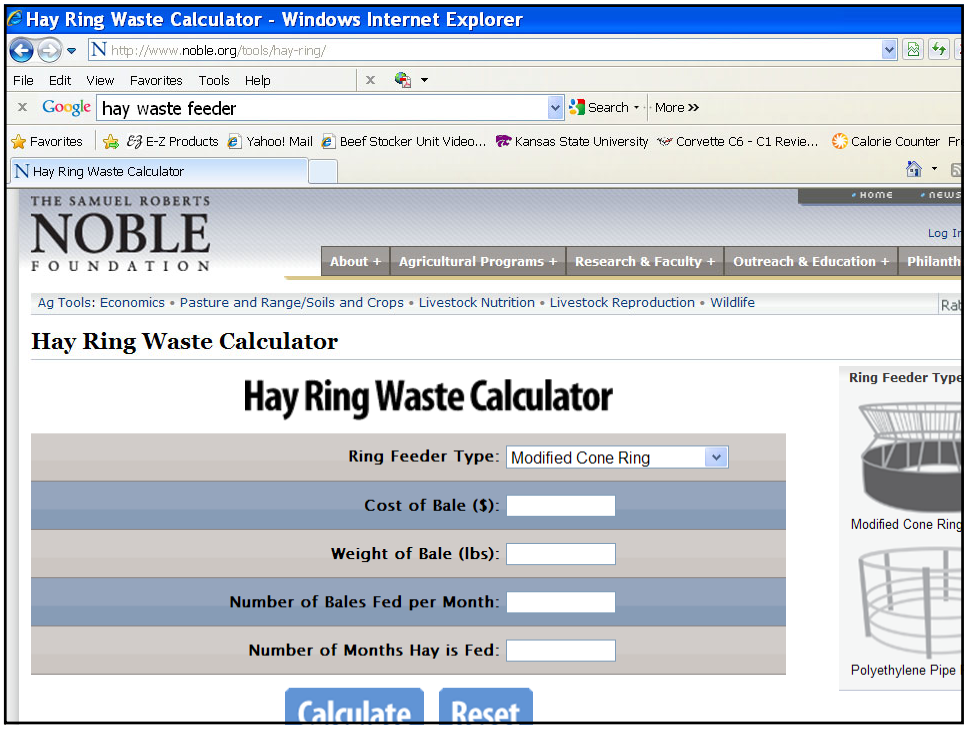
Hay Ring Waste Calculator - Windows Internet Explorer
http://www.noble.org/tools/hay-ring/
File Edit View Favorites Tools Help
Google hay waste feeder
Search
More
Favorites
E-Z Products
Yahoo! Mail
Beef Stocker Unit Video...
Kansas State University
Corvette C6 - C1 Revie...
Calorie Counter
Hay Ring Waste Calculator
THE SAMUEL ROBERTS NOBLE FOUNDATION
About +
Agricultural Programs +
Research & Faculty +
Outreach & Education +
Ag Tools: Economics • Pasture and Range/Soils and Crops • Livestock Nutrition • Livestock Reproduction • Wildlife
Hay Ring Waste Calculator
Hay Ring Waste Calculator
Ring Feeder Type: Modified Cone Ring
Cost of Bale ($):
Weight of Bale (lbs):
Number of Bales Fed per Month:
Number of Months Hay is Fed:
Calculate
Reset
Ring Feeder Type
Modified Cone Ring
Polyethylene Pipe

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Stretching your existing forage supplies

1. Assess your forage supply and alternatives
2. Feed test !!!
3. Reduce wastage
4. **Supplement accordingly !!!**

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Why Supplement/Feed on Pasture?

- Correction of nutrient deficiency in the base forage
- Increase the carrying capacity of a pasture
- Provide a vehicle for dispensing growth-promotion/health additive
- Enhance cattle management

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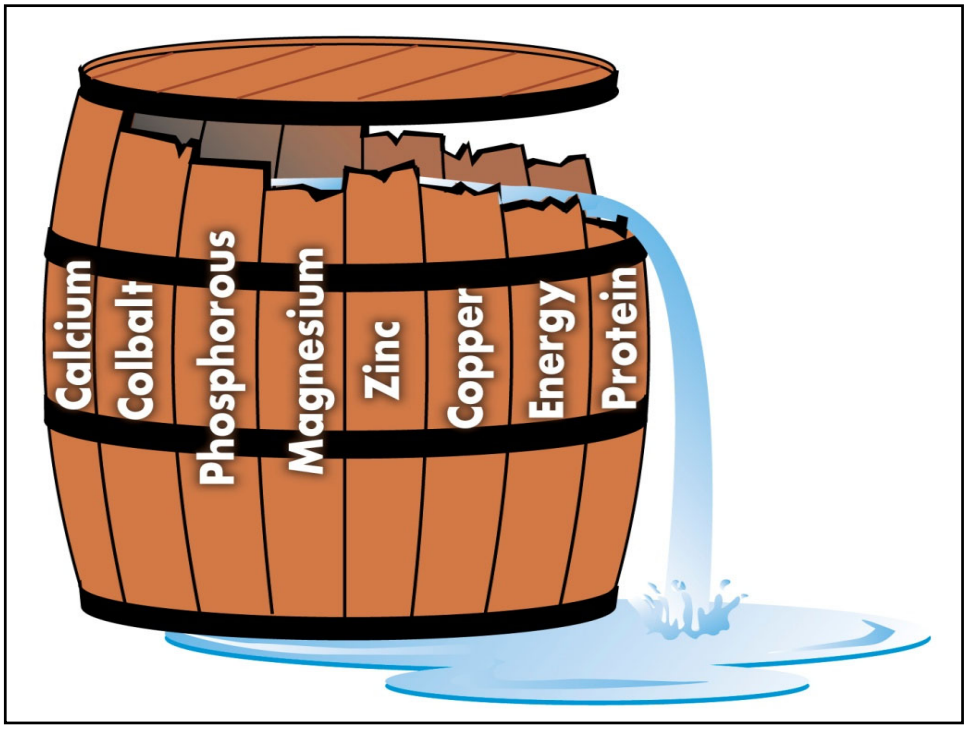
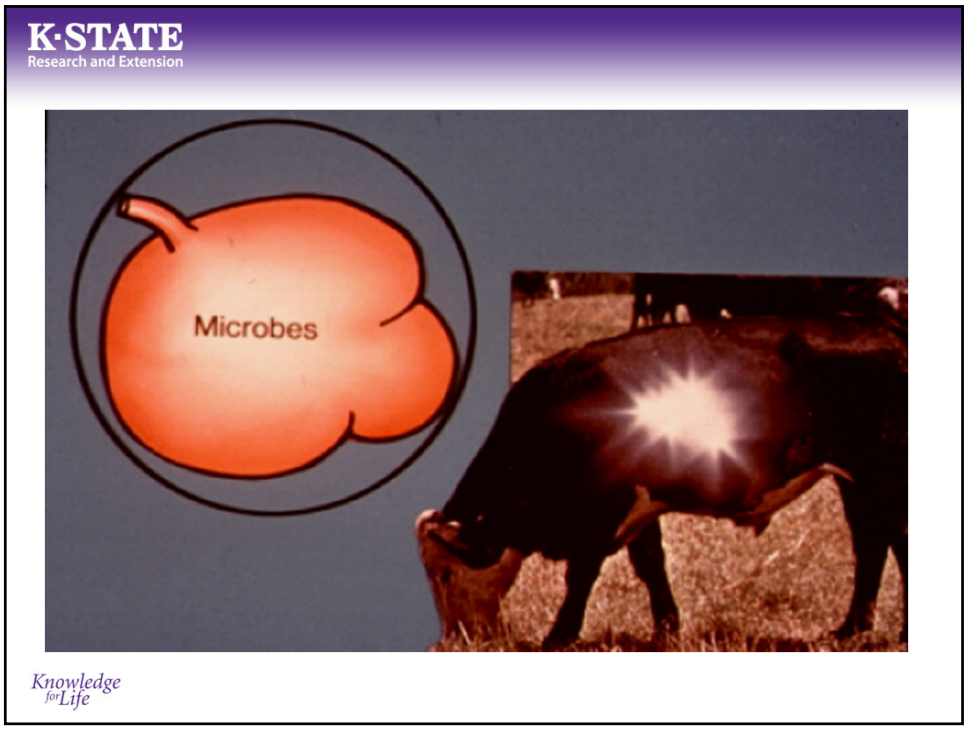

Calcium
Colbalt
Phosphorous
Magnesium
Zinc
Copper
Energy
Protein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Conditions in the Fermentation Vat (Rumen)

- Iso-thermal environment 39° C
- pH control
- Bi-phasic contractions
- Rumination
- Anaerobic environment

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Protein Supplementation and Intake of Medium Quality Prairie Hay

	Soybean meal (lbs/day)				
Item	0	.3	.6	.9	1.5
Hay intake (lb)	**10.4**	**11.3**	**13.1**	**13.6**	**15.0**
Hay intake (% of BW)	**1.88**	**2.03**	**2.36**	**2.44**	**2.68**
ADF digest., %	**33.5**	**35.7**	**40.9**	**40.8**	**43.94**

Okla. State Univ., 1984; 461 lb heifers

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Supplementation of Poor Quality Forages

- Protein is first limiting nutrient
- 20 to 35% boost in intake with protein
- Use supplements with at least 20% protein content

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Rumensin for Mature Beef Cows

- **Only ionophore** approved for use in mature, reproducing beef cows
- **Improves feed efficiency**, which helps maximize profitability
- Maintains body condition on **5% to 10% less feed**

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Use of Rumensin to Improve Forage Utilization

Item	Rumensin/mg/hd/day 0	50	200
Days on Rumensin at Calving	124	123	125
Days from Calving to Conception	93[a]	87[b]	87[b]
No. Cows Bred	99	93	100
No. Cows Conceived	90	86	97
Percent Conception	90	93	97

[a,b] Means with different superscripts are significantly different (P<.05)
4-Trial Dose Titration

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Effective Supplementation Programs

- Must have an approximate idea of:
  - Feed value of base forage
  - Quantity of forage an animal can consume
  - Nutritional needs of the animal

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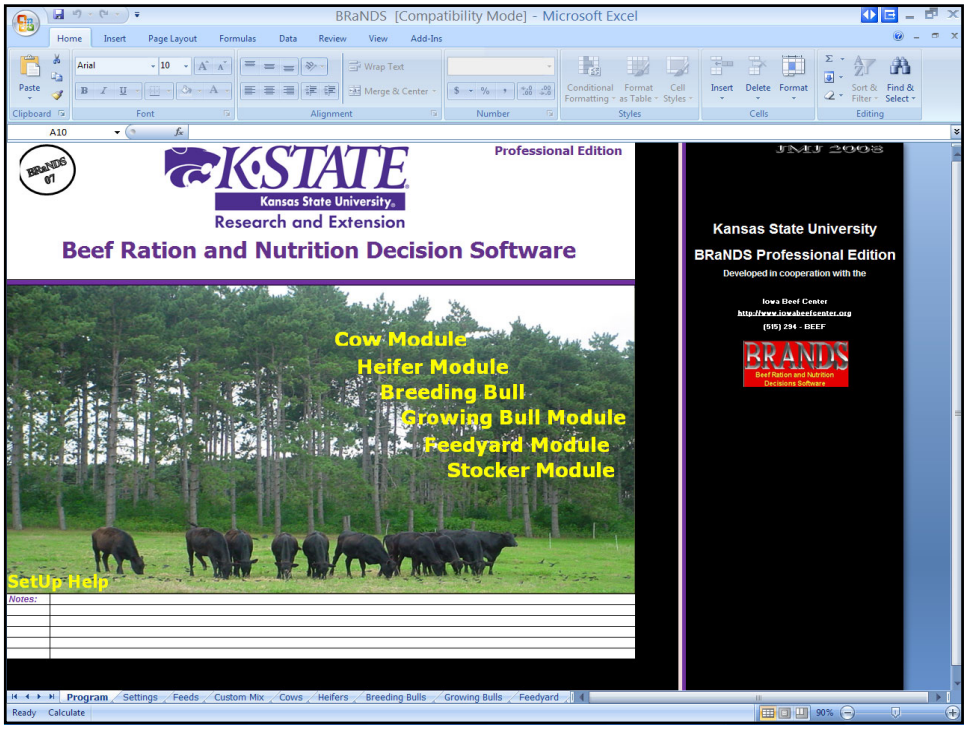
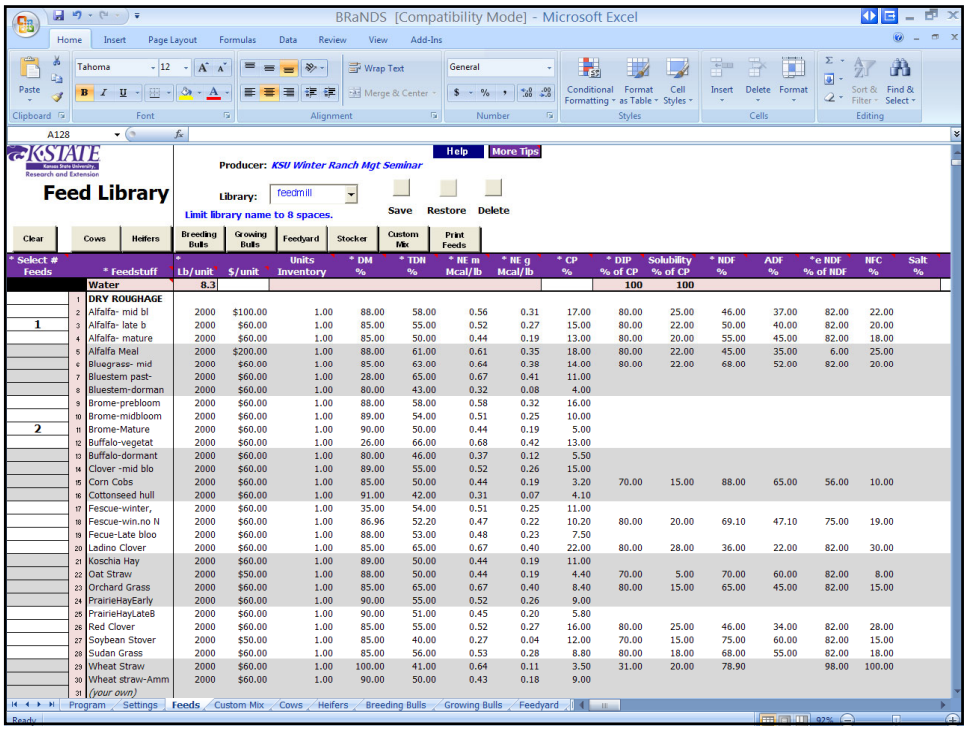
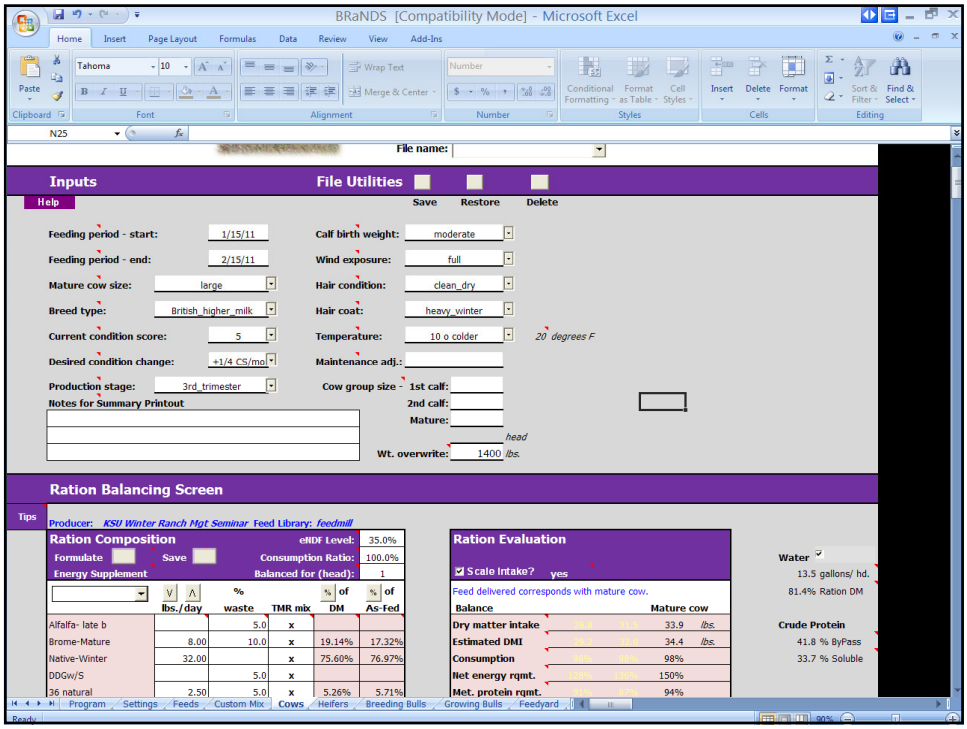
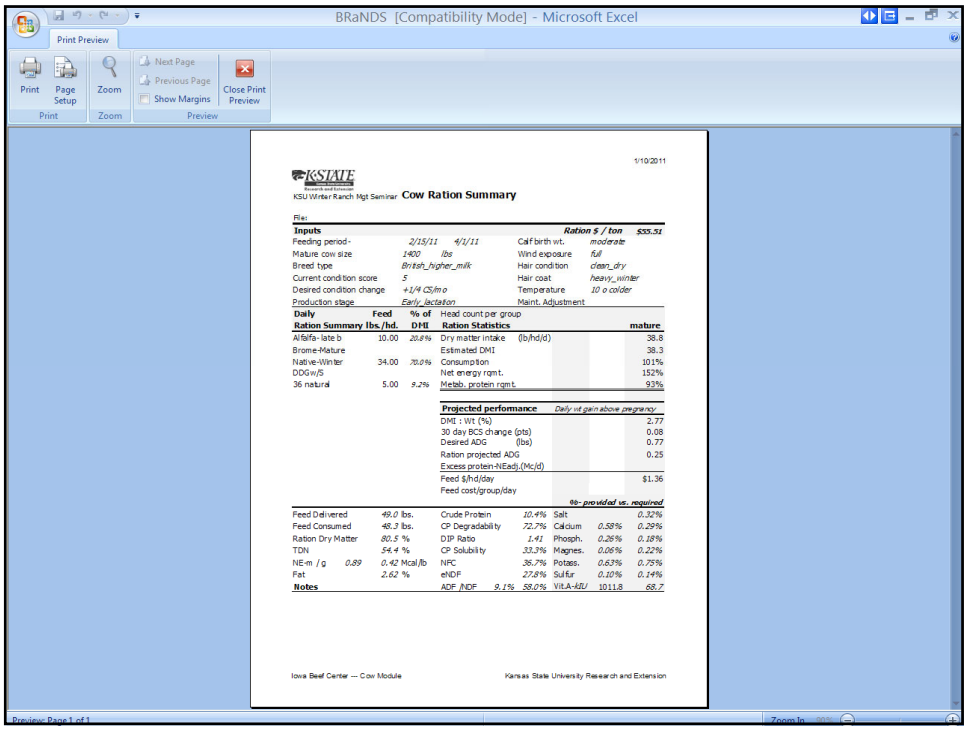

BRaNDS [Compatibility Mode] - Microsoft Excel
Professional Edition
K-STATE
Kansas State University
Research and Extension
Beef Ration and Nutrition Decision Software
Cow Module
Heifer Module
Breeding Bull
Growing Bull Module
Feedyard Module
Stocker Module
SetUp Help
Notes:
JULY 2003
Kansas State University
BRaNDS Professional Edition
Developed in cooperation with the
Iowa Beef Center
http://www.iowabeefcenter.org
(515) 294 - BEEF
BRANDS
Beef Ration and Nutrition Decisions Software
Program
Settings
Feeds
Custom Mix
Cows
Heifers
Breeding Bulls
Growing Bulls
Feedyard
Ready
Calculate


BRaNDS [Compatibility Mode] - Microsoft Excel
Feed Library
Producer: KSU Winter Ranch Mgt Seminar
Library: feedmill
Limit library name to 8 spaces.
Help
More Tips
Save
Restore
Delete
Clear
Cows
Heifers
Breeding Bulls
Growing Bulls
Feedyard
Stocker
Custom Mix
Print Feeds
Select # Feeds
Feedstuff
Lb/unit
$/unit
Units Inventory
DM %
TDN %
NE m Mcal/lb
NE g Mcal/lb
CP %
DIP % of CP
Solubility % of CP
NDF %
ADF %
eNDF % of NDF
NFC %
Salt %
Water 8.3 100 100
DRY ROUGHAGE
1 Alfalfa- mid bl 2000 $100.00 1.00 88.00 58.00 0.56 0.31 17.00 80.00 25.00 46.00 37.00 82.00 22.00
Alfalfa- late b 2000 $60.00 1.00 85.00 55.00 0.52 0.27 15.00 80.00 22.00 50.00 40.00 82.00 20.00
Alfalfa- mature 2000 $60.00 1.00 85.00 50.00 0.44 0.19 13.00 80.00 20.00 55.00 45.00 82.00 18.00
Alfalfa Meal 2000 $200.00 1.00 88.00 61.00 0.61 0.35 18.00 80.00 22.00 45.00 35.00 6.00 25.00
Bluegrass- mid 2000 $60.00 1.00 85.00 63.00 0.64 0.38 14.00 80.00 22.00 68.00 52.00 82.00 20.00
Bluestem past- 2000 $60.00 1.00 28.00 65.00 0.67 0.41 11.00
Bluestem-dorman 2000 $60.00 1.00 80.00 43.00 0.32 0.08 4.00
Brome-prebloom 2000 $60.00 1.00 88.00 58.00 0.58 0.32 16.00
Brome-midbloom 2000 $60.00 1.00 89.00 54.00 0.51 0.25 10.00
2 Brome-Mature 2000 $60.00 1.00 90.00 50.00 0.44 0.19 5.00
Buffalo-vegetat 2000 $60.00 1.00 26.00 66.00 0.68 0.42 13.00
Buffalo-dormant 2000 $60.00 1.00 80.00 46.00 0.37 0.12 5.50
Clover -mid blo 2000 $60.00 1.00 89.00 55.00 0.52 0.26 15.00
Corn Cobs 2000 $60.00 1.00 85.00 50.00 0.44 0.19 3.20 70.00 15.00 88.00 65.00 56.00 10.00
Cottonseed hull 2000 $60.00 1.00 91.00 42.00 0.31 0.07 4.10
Fescue-winter, 2000 $60.00 1.00 35.00 54.00 0.51 0.25 11.00
Fescue-win.no N 2000 $60.00 1.00 86.96 52.20 0.47 0.22 10.20 80.00 20.00 69.10 47.10 75.00 19.00
Fecue-Late bloo 2000 $60.00 1.00 88.00 53.00 0.48 0.23 7.50
Ladino Clover 2000 $60.00 1.00 85.00 65.00 0.67 0.40 22.00 80.00 28.00 36.00 22.00 82.00 30.00
Koschia Hay 2000 $60.00 1.00 89.00 50.00 0.44 0.19 11.00
Oat Straw 2000 $50.00 1.00 88.00 50.00 0.44 0.19 4.40 70.00 5.00 70.00 60.00 82.00 8.00
Orchard Grass 2000 $60.00 1.00 85.00 65.00 0.67 0.40 8.40 80.00 15.00 65.00 45.00 82.00 15.00
PrairieHayEarly 2000 $60.00 1.00 90.00 55.00 0.52 0.26 9.00
PrairieHayLateB 2000 $60.00 1.00 90.00 51.00 0.45 0.20 5.80
Red Clover 2000 $60.00 1.00 85.00 55.00 0.52 0.27 16.00 80.00 25.00 46.00 34.00 82.00 28.00
Soybean Stover 2000 $50.00 1.00 85.00 40.00 0.27 0.04 12.00 70.00 15.00 75.00 60.00 82.00 15.00
Sudan Grass 2000 $60.00 1.00 85.00 56.00 0.53 0.28 8.80 80.00 18.00 68.00 55.00 82.00 18.00
Wheat Straw 2000 $60.00 1.00 100.00 41.00 0.64 0.11 3.50 31.00 20.00 78.90 98.00 100.00
Wheat straw-Amm 2000 $60.00 1.00 90.00 50.00 0.43 0.18 9.00
(your own)
Program
Settings
Feeds
Custom Mix
Cows
Heifers
Breeding Bulls
Growing Bulls
Feedyard
Ready


BRaNDS [Compatibility Mode] - Microsoft Excel
File name:
Inputs
File Utilities
Save
Restore
Delete
Help
Feeding period - start: 1/15/11
Feeding period - end: 2/15/11
Mature cow size: large
Breed type: British_higher_milk
Current condition score: 5
Desired condition change: +1/4 CS/mo
Production stage: 3rd_trimester
Notes for Summary Printout
Calf birth weight: moderate
Wind exposure: full
Hair condition: clean_dry
Hair coat: heavy_winter
Temperature: 10 o colder
20 degrees F
Maintenance adj.:
Cow group size - 1st calf:
2nd calf:
Mature:
head
Wt. overwrite: 1400 lbs.
Ration Balancing Screen
Tips
Producer: KSU Winter Ranch Mgt Seminar Feed Library: feedmill
Ration Composition
eNDF Level: 35.0%
Formulate
Save
Consumption Ratio: 100.0%
Energy Supplement
Balanced for (head): 1
lbs./day
% waste
TMR mix
% of DM
% of As-Fed
Alfalfa- late b 5.0 x
Brome-Mature 8.00 10.0 x 19.14% 17.32%
Native-Winter 32.00 x 75.60% 76.97%
DDGw/S 5.0 x
36 natural 2.50 5.0 x 5.26% 5.71%
Ration Evaluation
Scale Intake? yes
Feed delivered corresponds with mature cow.
Balance
Mature cow
Dry matter intake 33.9 lbs.
Estimated DMI 34.4 lbs.
Consumption 98%
Net energy rqmt. 150%
Met. protein rqmt. 94%
Water
13.5 gallons/ hd.
81.4% Ration DM
Crude Protein
41.8 % ByPass
33.7 % Soluble
Program
Settings
Feeds
Custom Mix
Cows
Heifers
Breeding Bulls
Growing Bulls
Feedyard
Ready


BRaNDS [Compatibility Mode] - Microsoft Excel
Print Preview
Print
Page Setup
Zoom
Next Page
Previous Page
Show Margins
Close Print Preview
1/10/2011
KSU Winter Ranch Mgt Seminar
Cow Ration Summary
File:
Inputs
Ration $ / ton $55.51
Feeding period - 2/15/11 4/1/11
Mature cow size 1400 lbs
Breed type British_higher_milk
Current condition score 5
Desired condition change +1/4 CS/mo
Production stage Early_lactation
Calf birth wt. moderate
Wind exposure full
Hair condition clean_dry
Hair coat heavy_winter
Temperature 10 o colder
Maint. Adjustment
Daily Ration Summary
Feed lbs./hd.
% of DMI
Head count per group
Ration Statistics
mature
Alfalfa- late b 10.00 28.8%
Brome-Mature
Native-Winter 34.00 70.0%
DDGw/S
36 natural 5.00 9.2%
Dry matter intake (lb/hd/d) 38.8
Estimated DMI 38.3
Consumption 101%
Net energy rqmt. 152%
Metab. protein rqmt. 93%
Projected perfomance
Daily wt gain above pregnancy
DMI : Wt (%) 2.77
30 day BCS change (pts) 0.08
Desired ADG (lbs) 0.77
Ration projected ADG 0.25
Excess protein-NEadj.(Mc/d)
Feed $/hd/day $1.36
Feed cost/group/day
% provided vs. required
Feed Delivered 49.0 lbs.
Feed Consumed 48.3 lbs.
Ration Dry Matter 80.5 %
TDN 54.4 %
NE-m / g 0.89 0.42 Mcal/lb
Fat 2.62 %
Crude Protein 10.4% 72.7%
CP Degradability
DIP Ratio 1.41
CP Solubility 33.3%
NFC 36.7%
eNDF 27.8%
ADF /NDF 9.1% 58.0%
Salt 0.32%
Calcium 0.58% 0.29%
Phosph. 0.26% 0.18%
Magnes. 0.06% 0.22%
Potass. 0.63% 0.75%
Sulfur 0.10% 0.14%
Vit.A-kIU 1011.8 68.7
Notes
Iowa Beef Center — Cow Module
Kansas State University Research and Extension

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Stretching your existing forage supplies

- Consider options and manage
- Consider your cowherd – age, genetics and management
- Take stock of your feed supply and alternatives
  - Pasture, hay, straw, silage, grain, byproducts
- Consider "earlier than normal" weaning dates
- Evaluate your financial situation

Knowledge for Life

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BEEF STOCKER

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