


# **Understanding Beef Nutrition and Resources**



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Extension Feedlot Specialist

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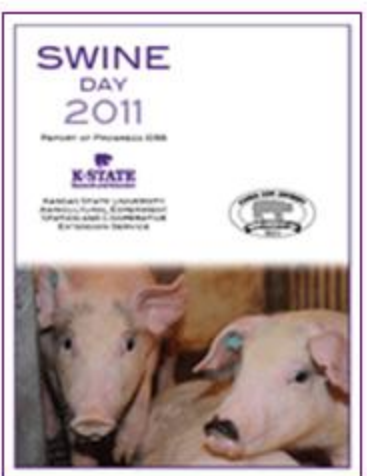
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SRP1050	Roundup 2011: Agricultural Research Center: Hays
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SRP1047SUMMARY	Summary publication: Cattlemen's Day 2011
MF266	Beef Cow-Calf Enterprise
MF593	Drylot Backgrounding and Finishing Beef
MF600	Drylot Backgrounding of Beef
MF592	Finishing Beef
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MF1008	Summer Grazing of Steers in Eastern Kansas
MF1007	Summer Grazing of Steers in Western Kansas
MF2950	Sweetclover Toxicity
MF1009	Winter Wheat Grazing
MF2656	Livestock Safety

# Questions and Answers on Beef Cattle Nutrition

**Chris Reinhardt**  
Feedlot Specialist

**Sandy Johnson**  
Livestock Production, Northwest

**Joel DeRouchey**  
Livestock Production, Northeast

**Dale Blasi**  
Stocker Production

**Ron Hale**  
Livestock Production, Southwest

**Larry Hollis**  
Beef Veterinarian

**Twig Marston**

# Beef Cattle Feed Requirements

Department of Agricultural Economics



Kansas State University Agricultural Experiment Station and Cooperative Extension Service

**Gerry L. Kuhl**

Feedlot Nutrition and Management  
Animal Science

**Twig Marston**

Cow Calf Management  
Animal Science

**Rodney Jones**

Agricultural Economist  
Livestock Production

Kansas beef producers use only a few basic beef cattle programs, but they use many modifications of these programs. This makes it somewhat difficult to state typical feed requirements for each livestock system. Some basic rations can be checked for the major systems and then substitutions can be made in the ration so long as all nutritional requirements are met.

Calculations for these have been made in accordance with the 1984 edition of *Nutrition Requirements of Beef Cattle* published by the National Academy of Sciences.

These feed requirements assume that ideal feeding conditions are prevalent and that growth stimulants are used to maximize feed efficiency. Also, the requirements assume that the cattle are ready to start gaining weight on each of these particular rations. If the cattle have been stressed or if adverse weather conditions exist, the gains as projected are too high. Producers may wish to adjust these total expected gains to better fit their particular operations.

The compositions of feedstuffs used in these rations are assumed to be average protein and energy calculated on a basis of megacals.





# Beef Cow Nutrition Guide

Twig T. Marston  
Extension Specialist  
Cow/Calf Management

Dale A. Blasi  
Extension Specialist  
Forage Nutrition and Management

Frank K. Brazle  
Extension Specialist  
Livestock Production, Southeast

Gerry L. Kuhl  
Extension Specialist  
Feedlot Specialization



Thin Condition



Moderate Condition



Good Condition

# Feeding Your Cows by Body Condition



# Nutritional Composition of Feedstuffs for Beef Cattle

Gerry Kuhl, Extension Specialist  
Danny Simms, Former Extension Specialist  
Cathy Bandyk, Extension Assistant  
Animal Sciences and Industry

*These typical nutritional values are based on 1982-83 Research Council publications and recent beef cattle reports, and will most accurately represent animal utilization if the feedstuffs are used in roughage-based rations for growing cattle.*

*Since growing, harvesting and storage conditions can influence the nutritional content of feeds, actual feed and feedstuffs to be used can help in fine-tuning rations.*

*Please see table starting on page 2.*



# FORAGE FACTS

## *Table of Contents*

### Grasses / Legumes

Smooth Brome

Tall Fescue

Eastern Gamagrass

Bermudagrass

Old World Bluestem

Legumes for Pasture

Irrigated Pasture

Matua Grass

Grazing Wheat Pasture

Small Grain Cereals as Forage: Crop Selection

Brassicas and Chicory for Forage

Utilizing Crabgrass as a Forage

Stocking Tall Fescue for Winter Use

Blister Beetles

Nutritional Requirements for Beef Cows

Foamy Pasture Bloat

How to Assemble and Evaluate

a Forage Grazing System

Sericea Lespedeza

Relative Feed Value Measures Forage Quality

Cattle Grazing and Soil Compaction

Soil Type and Forage Production

Musk Thistle Control

Forage Sampling and Analysis

Grazing and Haying Conservation Reserve

Program Land

Storing Large Round Bales Outside

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# # RMP Product feeds



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# By-product Feeds

- Definition: What's left when they take the “good stuff” out
- Not a “CO-PRODUCT”
- Taking “good stuff” out concentrates the other stuff

# Example

	Percent of DM	
	Corn	WDG
Starch	~70	~0



# Example

---

	Percent of DM	
	Corn	WDG
Starch	~70	~0
Protein	~9	~30

---





# Example

	Percent of DM	
	Corn	WDG
Starch	~70	~0
Protein	~9	~30
NDF	~10.8	46

# Example

---

	Percent of DM	
	Corn	WDG
Starch	~70	~0
Protein	~9	~30
NDF	~10.8	46
Phosphorus	~.32	~.84

---

# Example

	Percent of DM	
	Corn	WDG
Starch	~70	~0
Protein	~9	~30
NDF	~10.8	46
Phosphorus	~.32	~.84
Sulfur	~.14	~.5 – <b>2.0%</b>

# Keep in Mind:

- For ration balancing:
  - Protein
  - Sulfur
- For nutrient planning
  - Phosphorus
  - Nitrogen

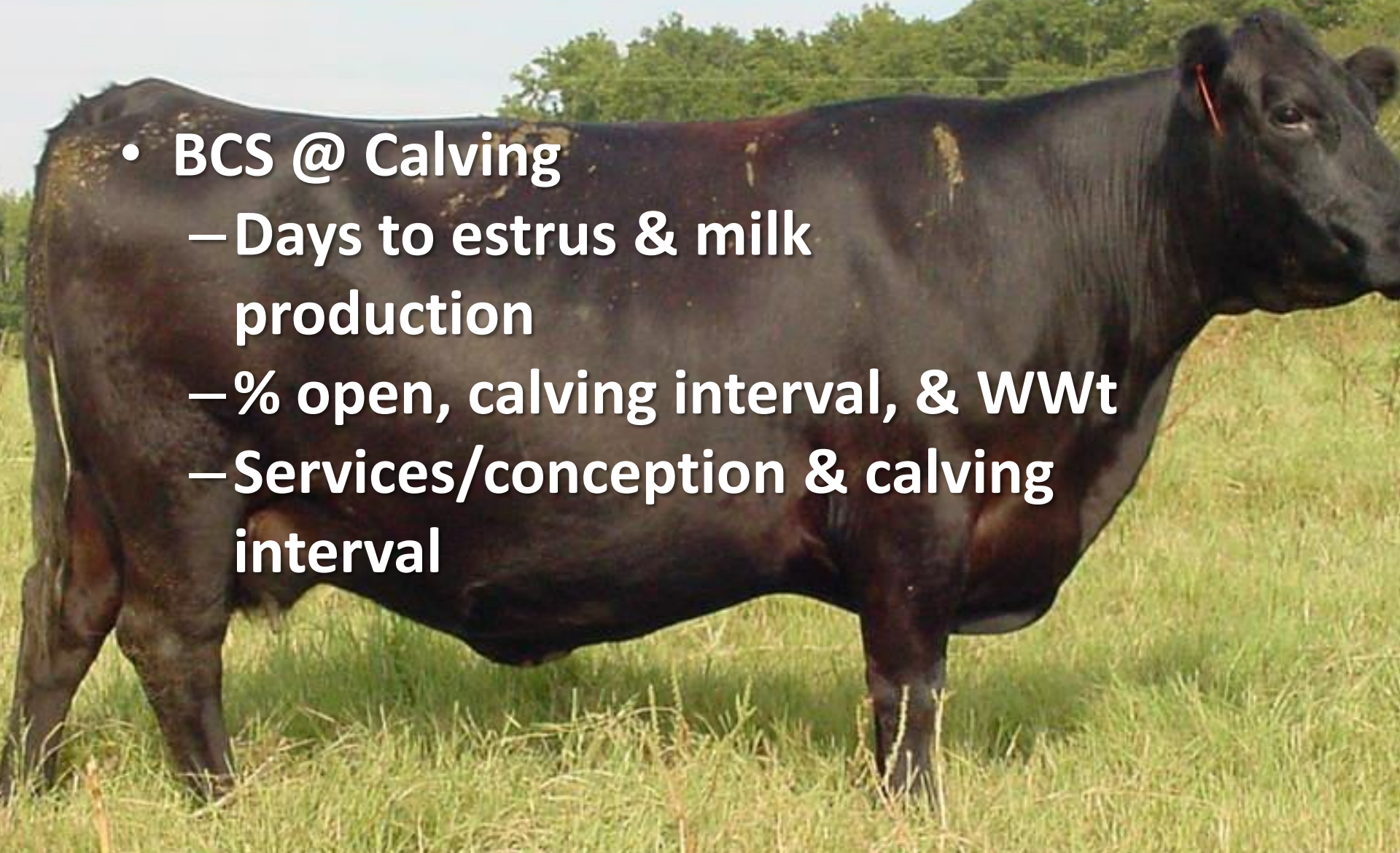
# Summary

- Good source of Protein and Energy
- Good conditioner for ration (WDG)
- Watch the Sulfur
- Extra Phosphorus must be managed in drylot

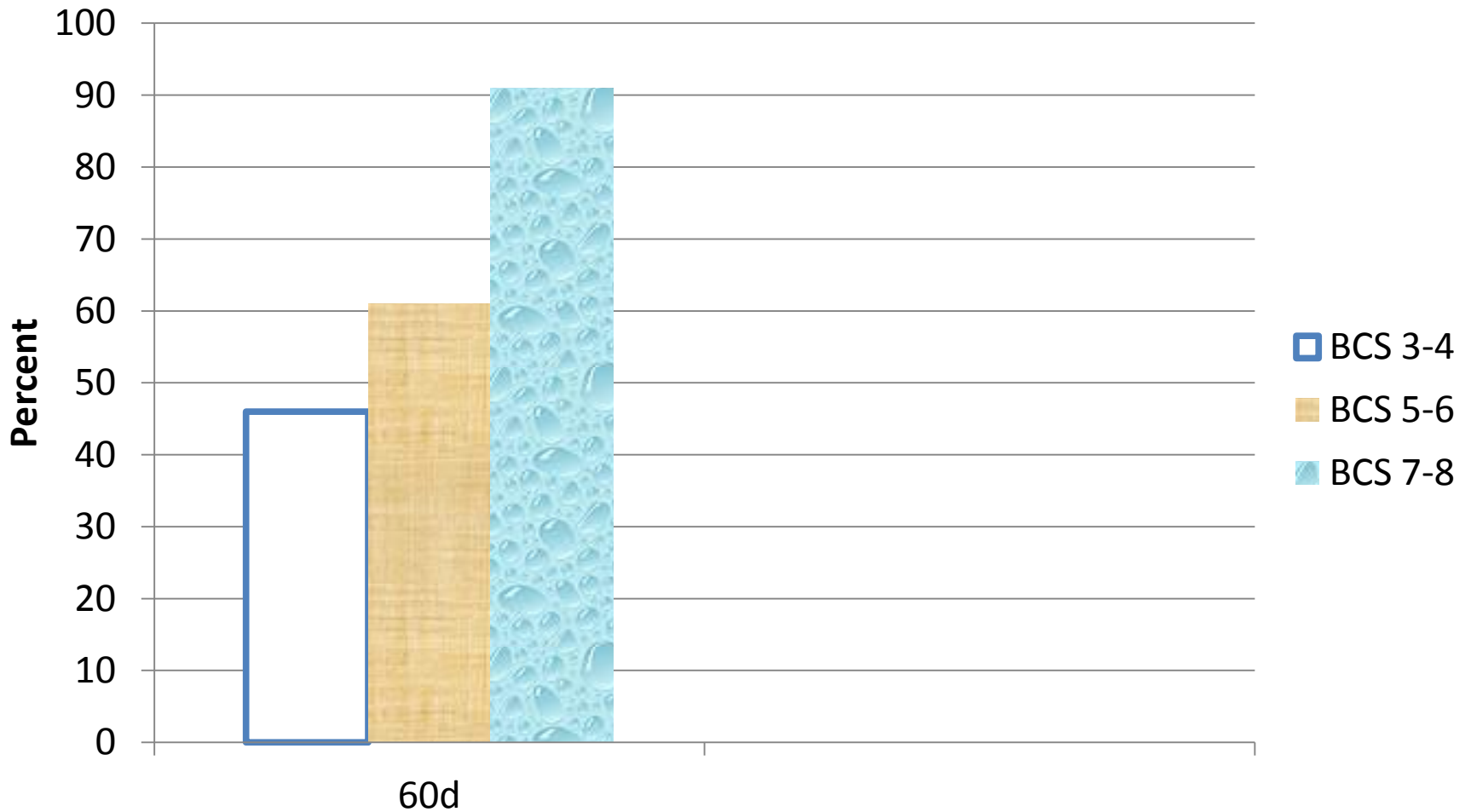


# Body Condition Scoring Cows

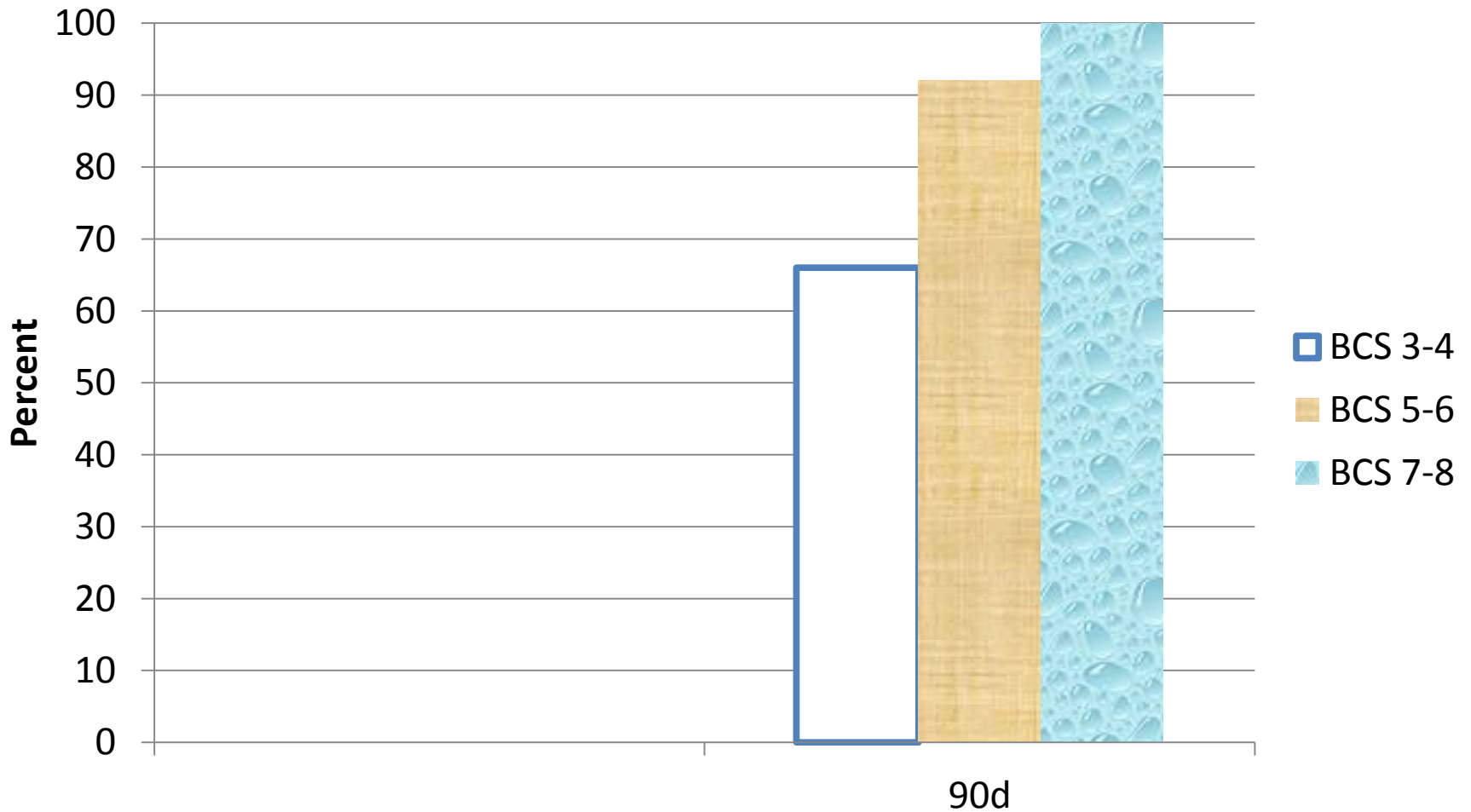
- **BCS @ Calving**
  - Days to estrus & milk production
  - % open, calving interval, & WWt
  - Services/conception & calving interval



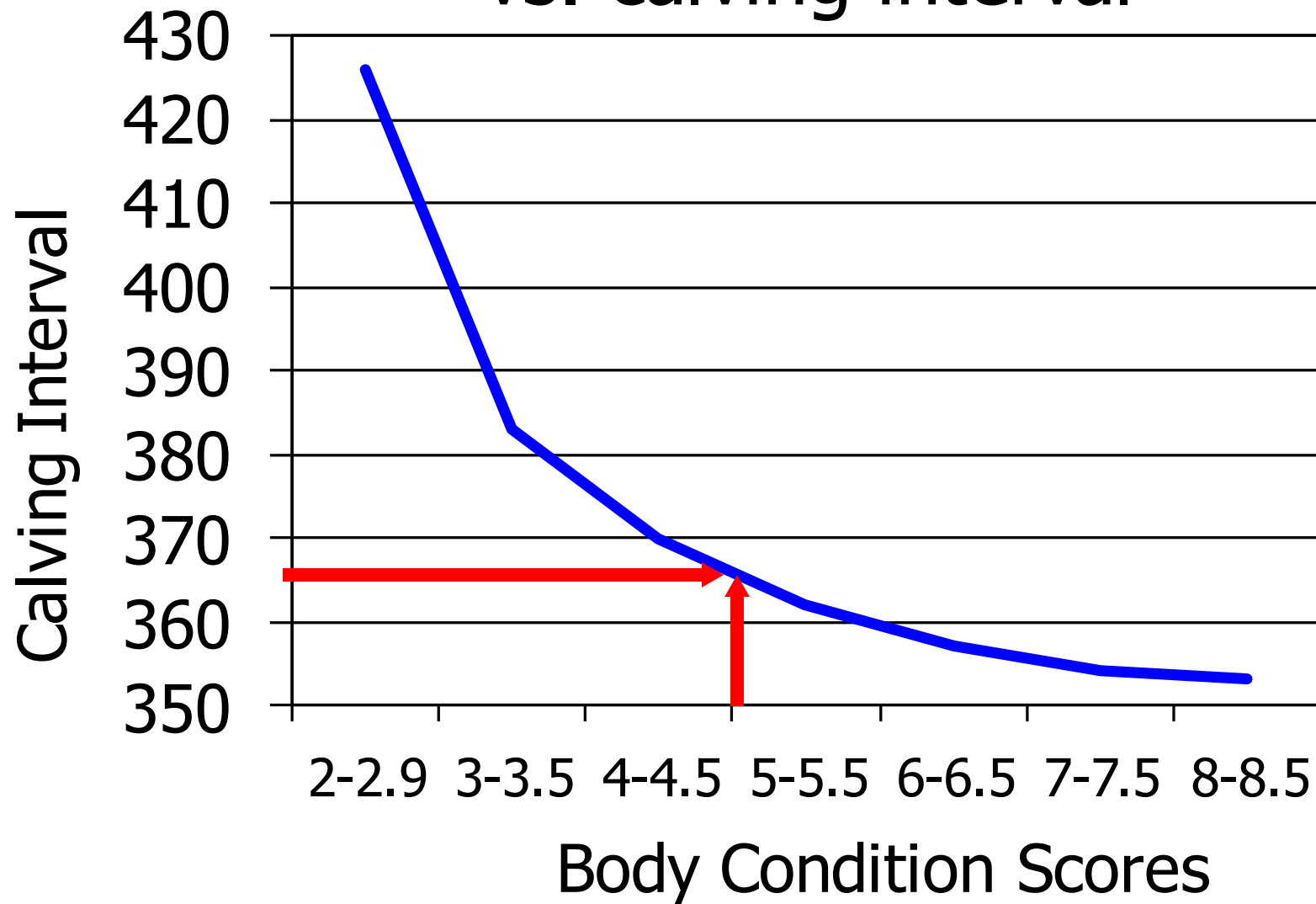
# Pct of Thin, Moderate, or Fleshy cows in heat 60 and 90 d post-calving



# Pct of Thin, Moderate, or Fleshy cows in heat 60 and 90 d post-calving



# Body condition score at calving vs. calving interval

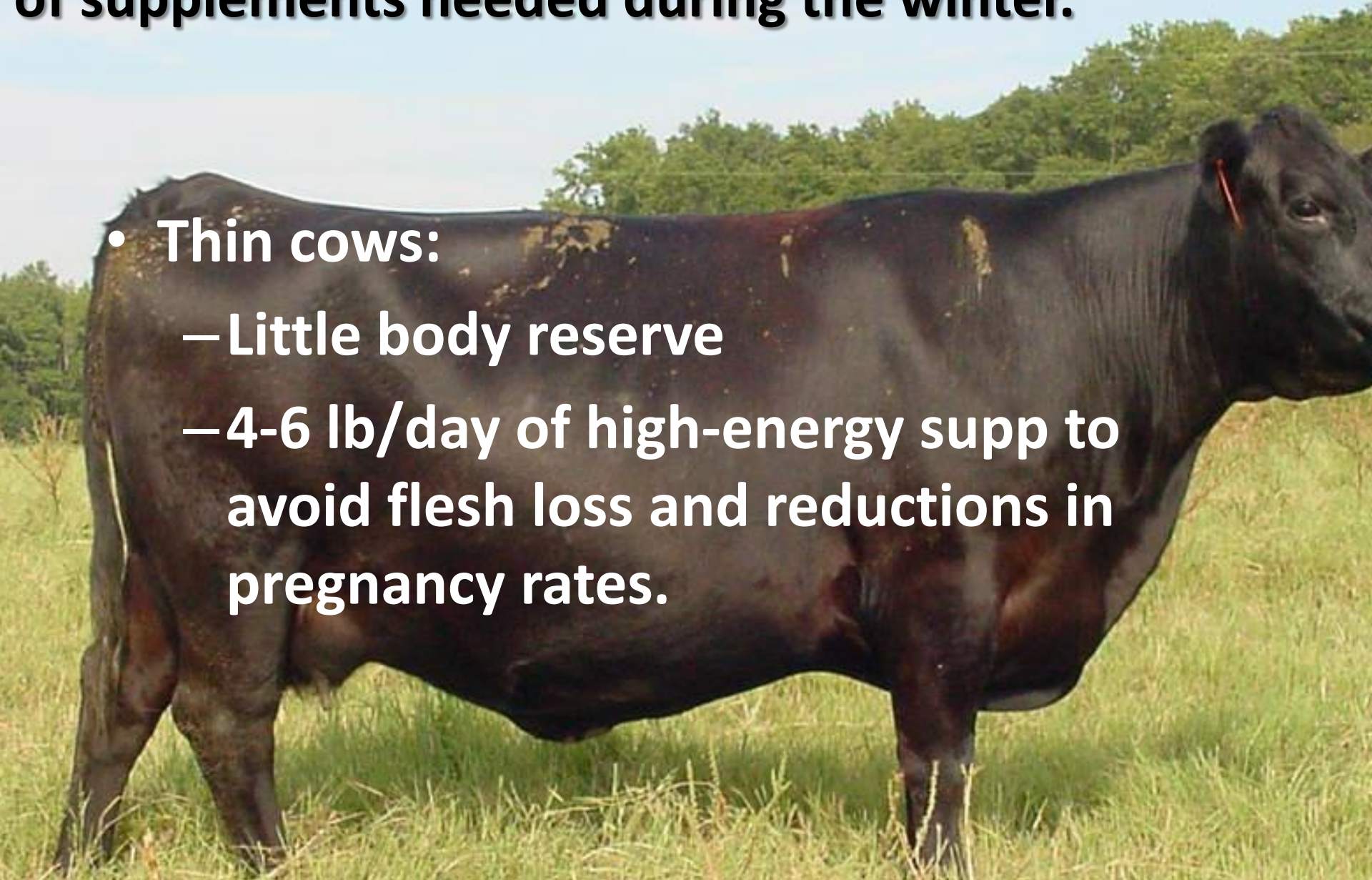


(Adapted from Kilkenny, 1978)



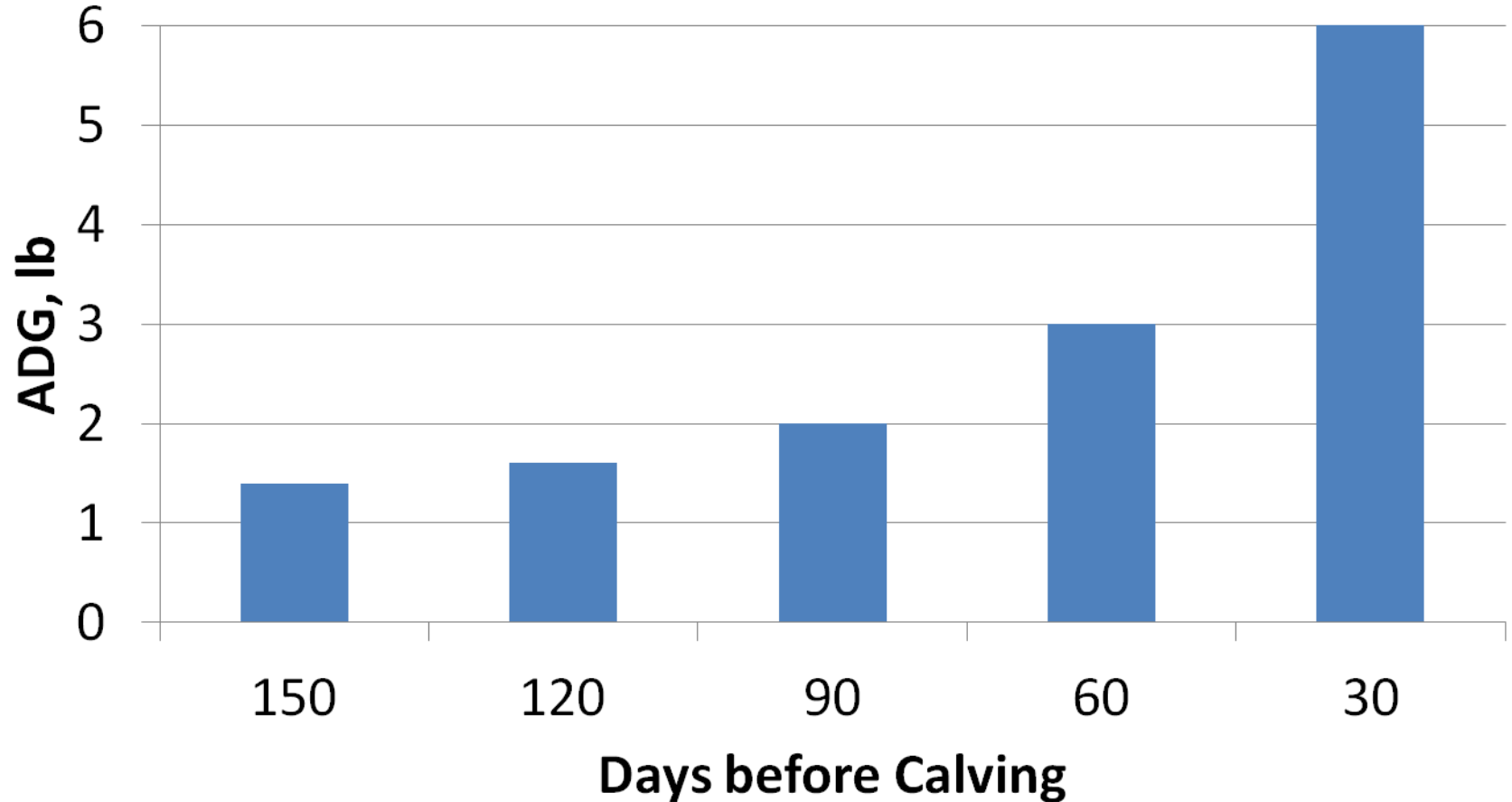
# **Body condition affects the amount and type of supplements needed during the winter.**

- **Thin cows:**
  - **Little body reserve**
  - **4-6 lb/day of high-energy supp to avoid flesh loss and reductions in pregnancy rates.**





# ADG needed to get from BCS 4→5 by Calving



# Failure of Passive Transfer (FPT)

A photograph of a brown cow standing in a field. The cow is the central focus, with its body and legs visible. In the background, there is a wooden fence and some greenery. The lighting is bright, suggesting a sunny day.

**1. Dystocia**

**2. Poor Cow nutrition/BCS**



# Failure of Passive Transfer (FPT)

- Calves with “inadequate” passive immunity:
  - $6.4 \times$  ↑ risk of morbidity the first 28 days of life
  - $3.2 \times$  ↑ risk of morbidity prior to weaning
  - $5.4 \times$  ↑ risk of death prior to weaning
  - $3.0 \times$  ↑ *risk of morbidity in the feedlot*

# Cow Nutrition and Calf Health

- BCS  $\leq 4$  ↓ amount & quality of colostrum
- BCS  $\leq 4$  ↓ stamina during parturition
- BCS  $\leq 4$  ↓ calf energy supply during and after parturition
- BCS  $\leq 4$  ↓ calf survival

# Match the Production to the Environment

- Wean calves before cow BCS slips
  - lower plane of nutrition (*i.e.* = *cheaper!*) during winter
  - Calf weaning coincides with warmer, drier weather
  - Especially during drought---SAVE THE FACTORY!



# Body Condition Scoring Cows

- Profit is closely related to reproduction
- Use BCS to determine supp needs to ensure maximum repro efficiency!!!



# Rules of Thumb: Weaning calves

- ~14% Crude Protein
- ~50% 'concentrate'
  - 44-48 NEg
- Good quality hay
  - Silage is ok!
- Wet DG and/or silage as a moisture conditioner

# Weaning Diet 1

Ingredient	Percentage
WDG	17
Corn	25
Pr. Hay	26
Alf. Hay	30
Supp.	2.00
Total	100





# Weaning Diet 1

Ingredient	Percentage
WDG	17
Corn	25
Pr. Hay	26
Alf. Hay	30
Supp.	2.00
Total	100
DM	76.2
CP	14.4
NEg	42.9

# Rules of Thumb: Growing calves

- $\geq 12\%$  CP
- 48-56 NEg
- 2.5-3.0 lb / day
  - Genetics
  - Heifers vs. Steers
- Step up *gradually*
  - 44 → 48 → 52 → 56

# Grower Diet

Ingredient	Percentage
WDG	15
C. Silage	20
Corn	30
Pr. Hay	13
Alf. Hay	20
Supp.	2.00
Total	100



# Grower Diet

Ingredient	Percentage
WDG	15
C. Silage	20
Corn	30
Pr. Hay	13
Alf. Hay	20
Supp.	2.00
Total	100
<b>DM</b>	<b>59.1</b>
CP	13.3
NEg	48.5

# Rules of Thumb: Cows

- $\leq 11\%$  CP
- NEg = depends on BCS!
- 1 BCS = 80-100 lbs
- She weighs **1300 lbs** unless you KNOW otherwise...

# Cow Diet – 2<sup>nd</sup> Trimester

Ingredient	POUNDS
WDG	8
Wheat Straw	12
Mineral	0.25
Total	100
TDN	59.0
CP	14.0

# Cow Diet – 3<sup>rd</sup> Trimester

Ingredient	POUNDS
WDG	8
Wheat Straw	9
Prairie hay	9
Mineral	0.25
Total	26.25 lb
TDN	59.0
CP	12.6



# Cow Diet – 3<sup>rd</sup> Trimester “Conventional”

Ingredient	POUNDS
<u><b>20% Cubes</b></u>	<u><b>4</b></u>
Prairie hay	<b>20</b>
Mineral	0.25
Total	24.25 lb
TDN	<u><b>54%</b></u>
CP	<u><b>9%</b></u>

**Lose 1 BCS**

**Calve @  
BCS 4.0**

# Cow Diet – Lactation

Ingredient	POUNDS
<b>WDG</b>	9
Wheat Straw	4
Prairie hay	18
Mineral	0.25
Total	31.25 lb
TDN	<b>59.0</b>
CP	12.6

***\$2.69/day***

# Cow Diet – Lactation – Alt.

Ingredient	POUNDS
WDG	7.5
<i>Alfalfa – fair</i>	4
Prairie hay	<b>16</b>
Mineral	0.25
Total	27.75 lb
<b><i>TDN</i></b>	<b>59.0</b>
CP	12.6

***\$2.70/day***

# Cow Diet – Lactation – Alt.2

Ingredient	POUNDS
<u><b>20% Cubes</b></u>	<u><b>8</b></u>
<b><i>Alfalfa – fair</i></b>	<b>4</b>
Prairie hay	<b>20</b>
Mineral	0.25
Total	32 lb
TDN	57.7%
CP	11.6%

***\$3.00/day***

# Value of DGs

- ~30¢ / cow per day vs. cubes
- \$30 / day for 100 cow herd
- ***\$3,000 for the season!***

# Summary

*Got Feed?*

*We can make it work!*



**Questions?**





**Thank you, and good formulating!**