

Nutrition Management

Beef Systems Short Course



**SOUTHERN
EXTENSION
RISK
MANAGEMENT
EDUCATION**

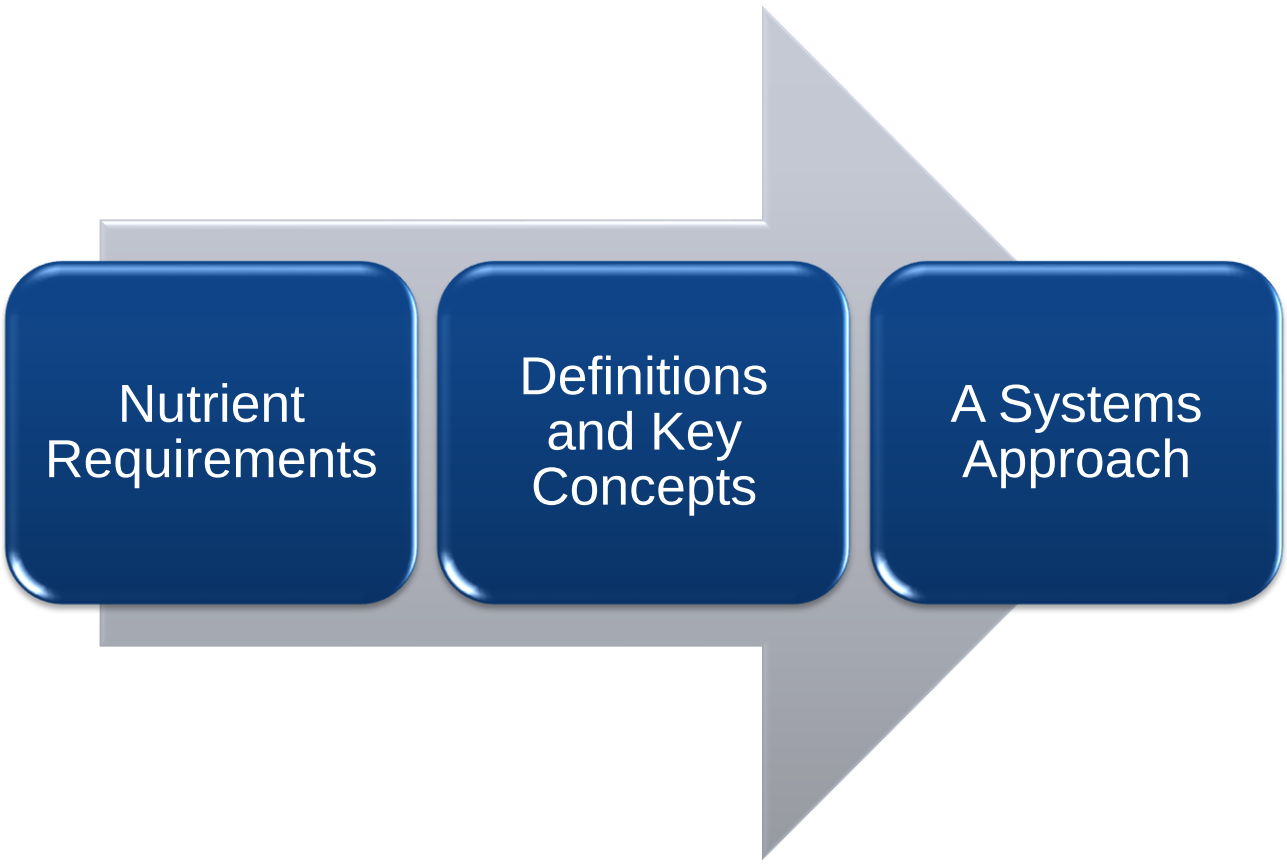


United States Department of Agriculture
National Institute of Food and Agriculture

This material is based upon work
supported by USDA/NIFA under
Award Number
2015-49200-24228.



Outline



Nutrient
Requirements

Definitions
and Key
Concepts

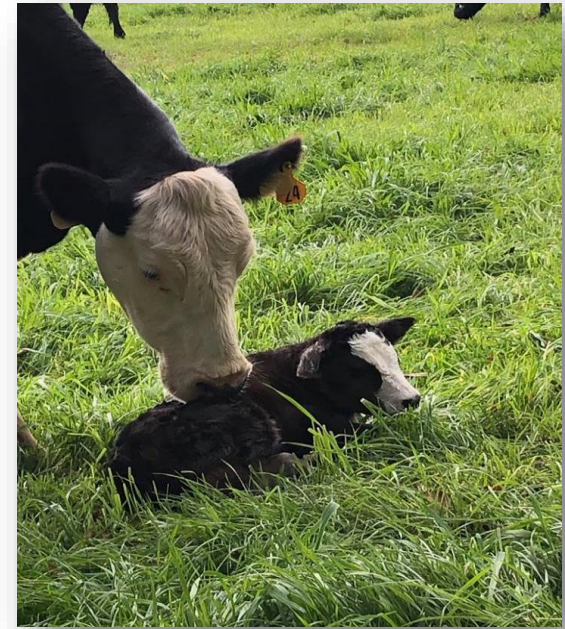
A Systems
Approach

Nutrition Doesn't Come in a Bag



Importance of Nutrition

- Cow-calf Operation
 - Raise a calf every year
 - Breed back
 - Maintenance and longevity in herd

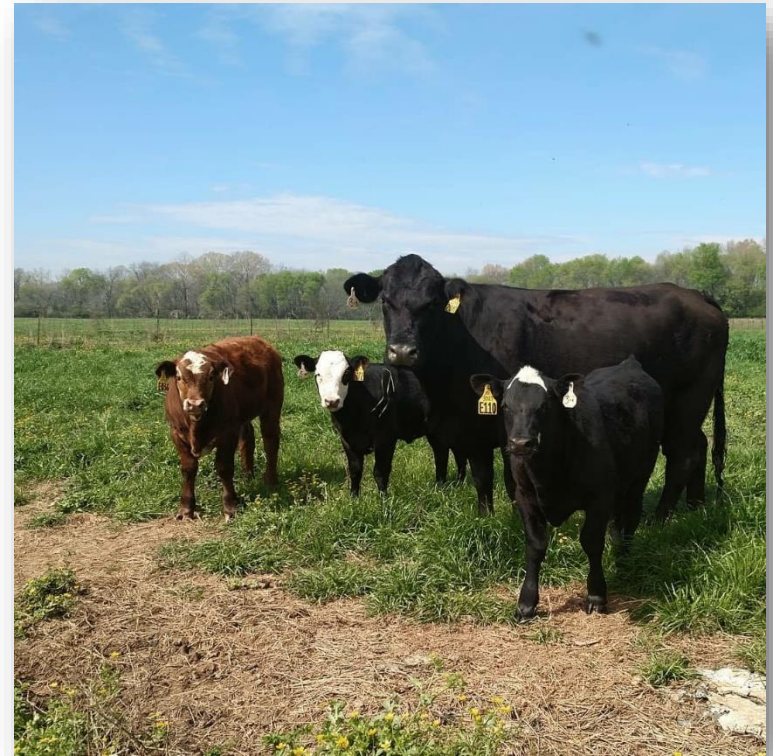


This requires different levels of:

Energy
Protein
Water
Vitamins
Minerals

Beef Cattle Nutritional Needs Vary By:

- Animal age
- Class
- Stage of production
- Performance level
- Weight
- Environment



Cow Nutrient Demands

- 1) Maintenance
- 2) Growth
- 3) Lactation
- 4) Reproduction



Photo: Cow maintenance energy increases in cold, wet weather and muddy conditions

Stage of Production

Highest Nutrient Needs

Newborn calves

Growing calves

Lactating cows

Replacement heifers

Dry cows

Lowest Nutrient Needs



NUTRIENT REQUIREMENTS OF BEEF CATTLE

Water – The Most Basic Nutrient

Mean Air Temperature (F°)		
Animal Class/Stage of Production	50°F	90°F
	----- gallons per day -----	
400 lb calf	4	10
1,000 lb steer	8	17
Mature cow	8	20

Source: NRC, 2016

Definitions

- **Dry matter intake**
 - Portion of forage or feed when water is removed
 - How much total forage/feed consumed daily



Example:

30 pounds of dry matter
~100 pounds of lush, fresh
forage

Definitions

- **Total digestible nutrients (TDN)**
 - The daily energy requirement provided by a forage or feedstuff



A

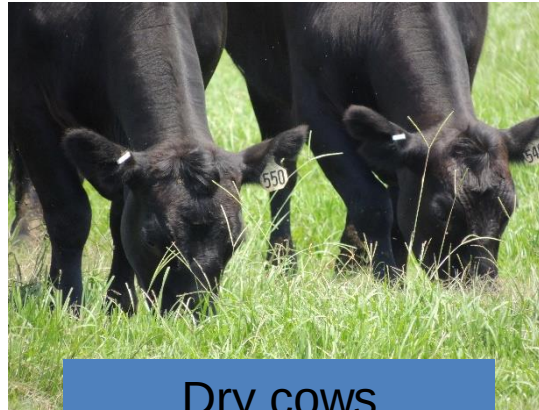


B

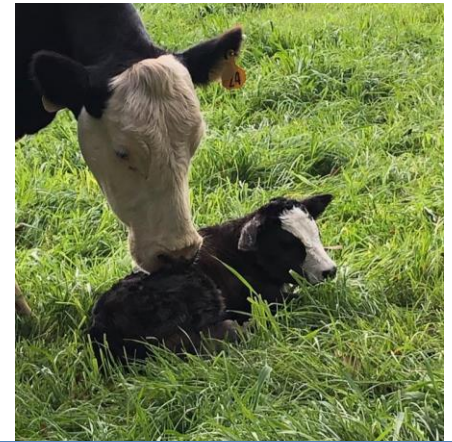
Definitions

- **Crude protein (CP)**

- An estimate of the total nitrogen in a forage or feed multiplied by 6.25
- Important for muscle development, growth, and maintenance



Dry cows



Cow with young calf

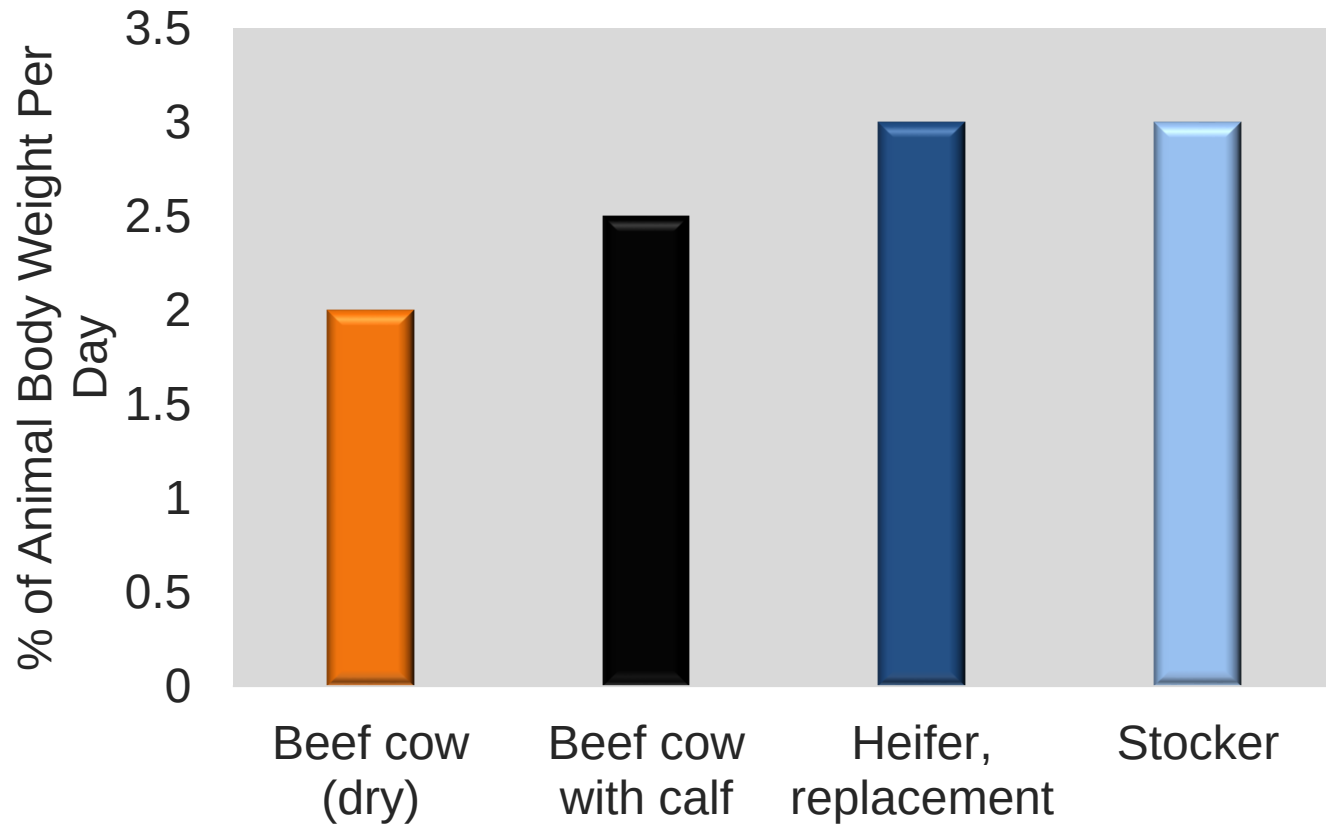
Definitions

- **Calcium (Ca)
and
Phosphorus (P)**

- Two minerals required in the greatest amount daily by beef cattle



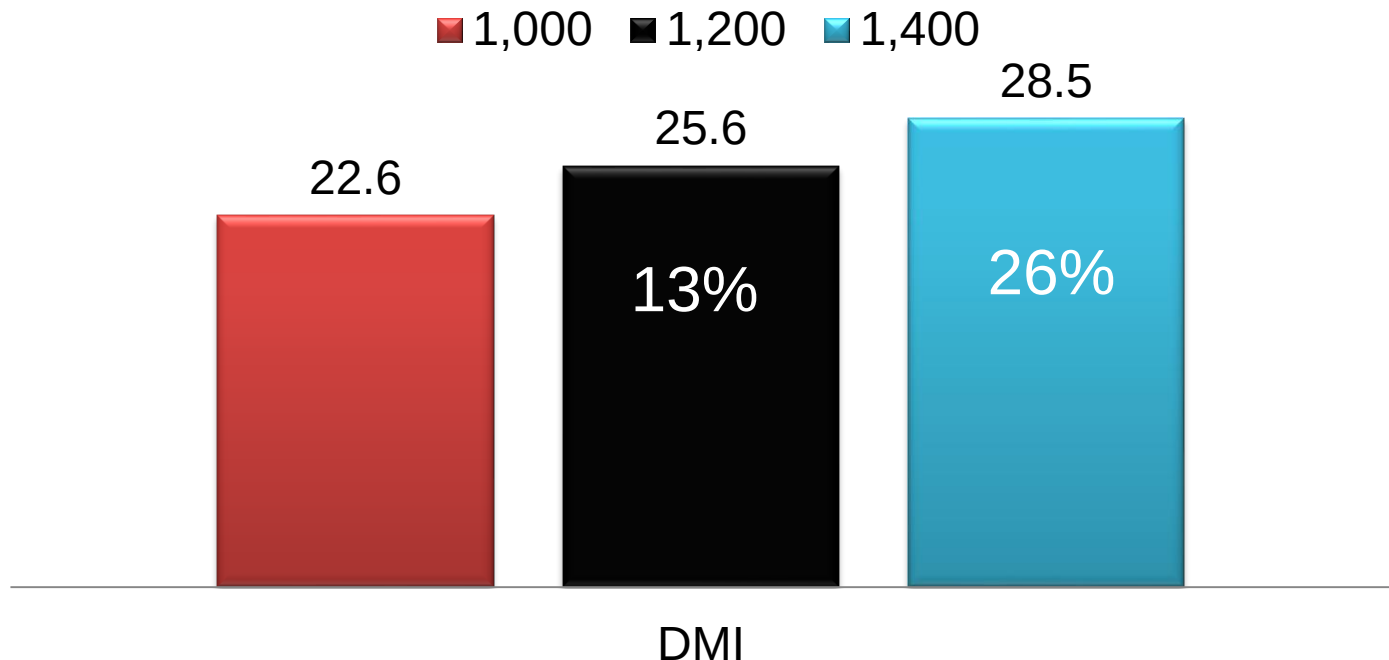
Dry Matter Intake of Beef Cattle



Rule of Thumb: 2.0 to 2.5% of body weight per day

How many pounds of forage can a cow eat per day?

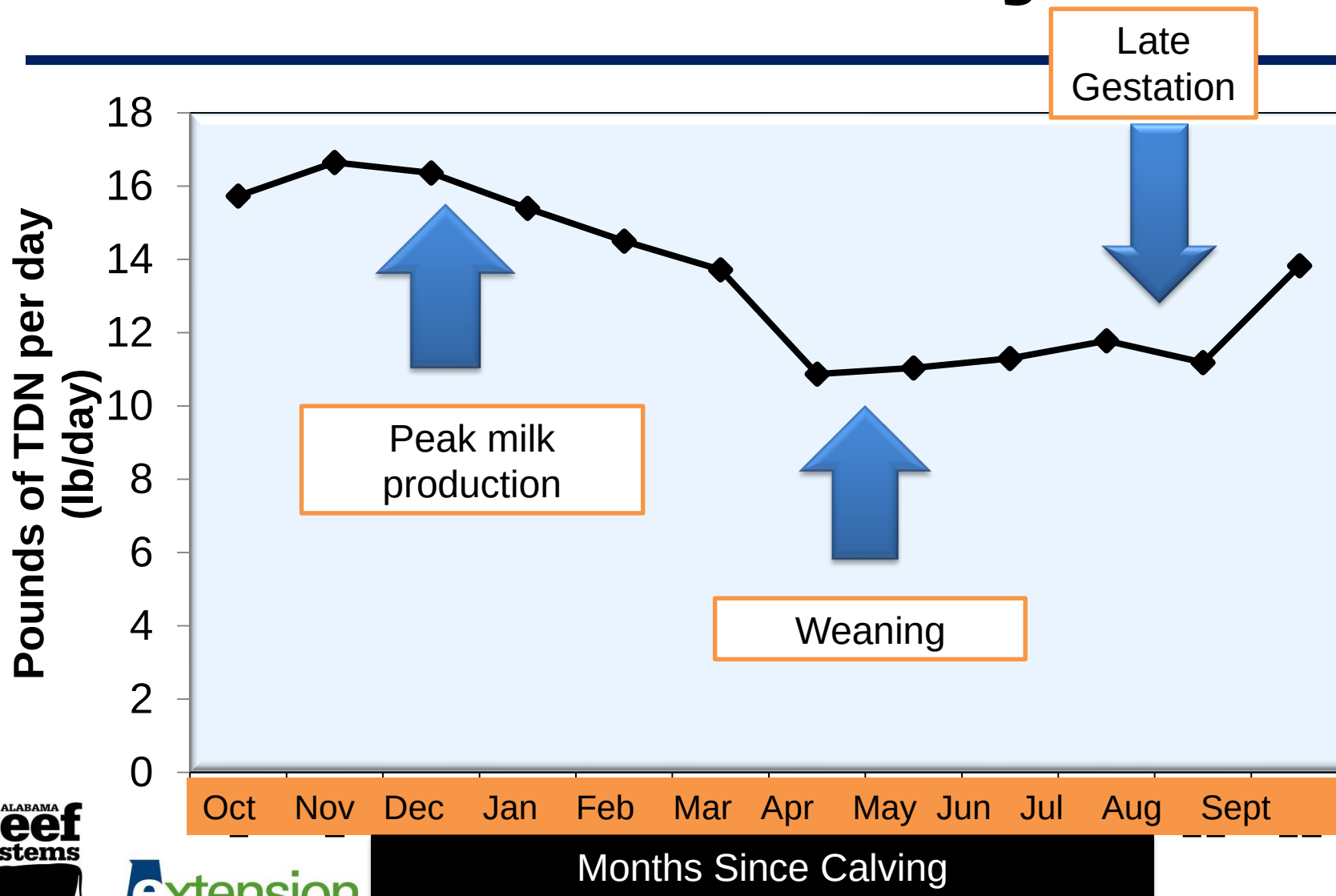
Dry Matter Intake of Mature Cows (pounds per day)



Source: NRC- Beef Cattle
(2016)

p. 29-31 – Beef Handbook

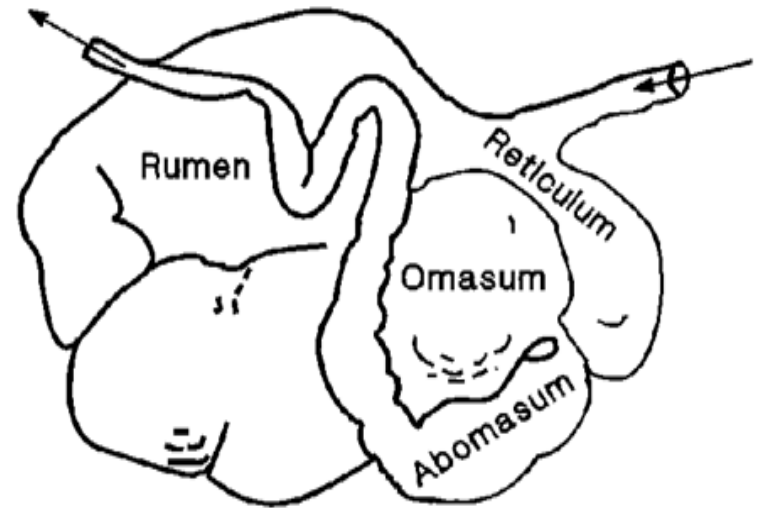
Nutrient Needs – Key Times



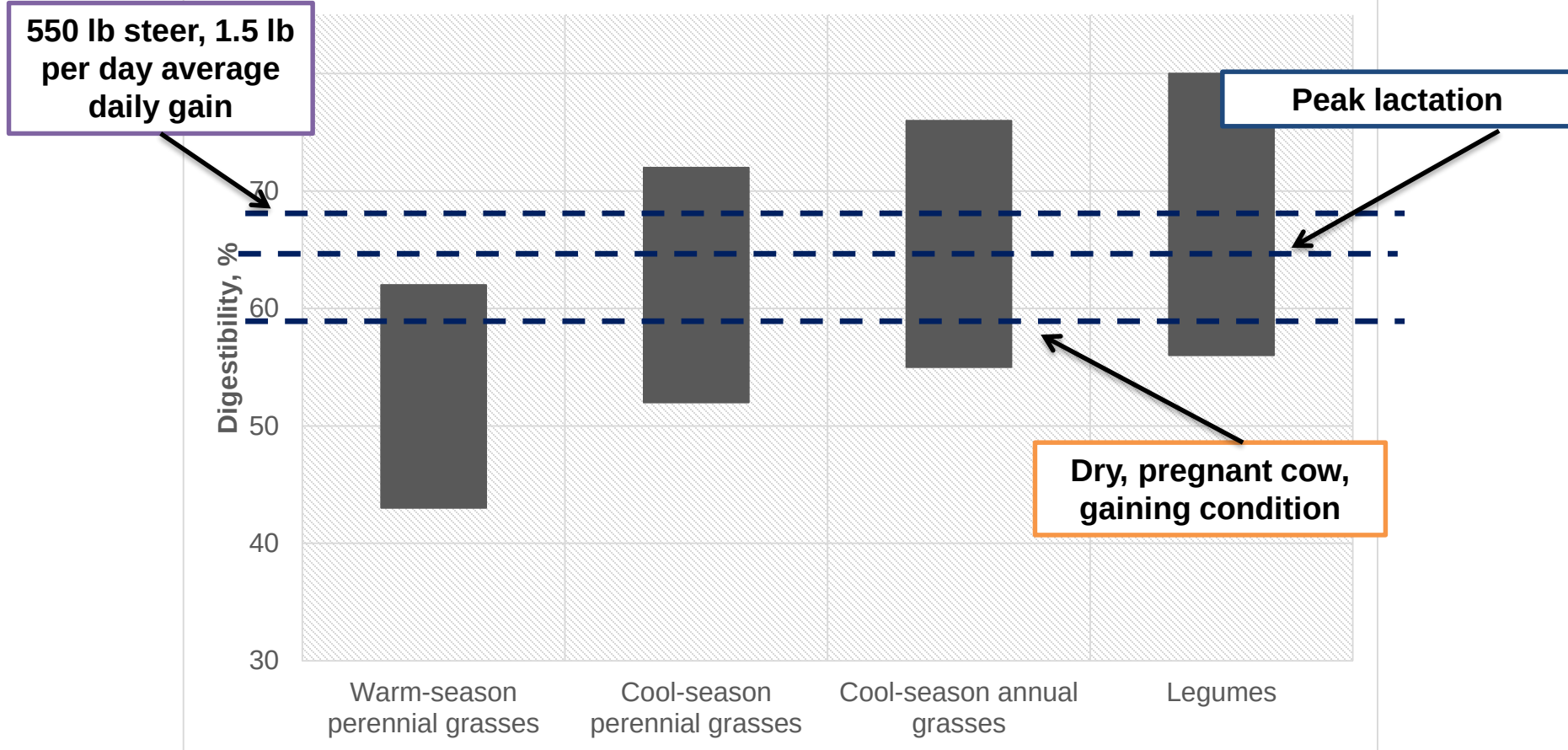
KEY NUTRITIONAL CONCEPTS

Cattle are developed to digest forages

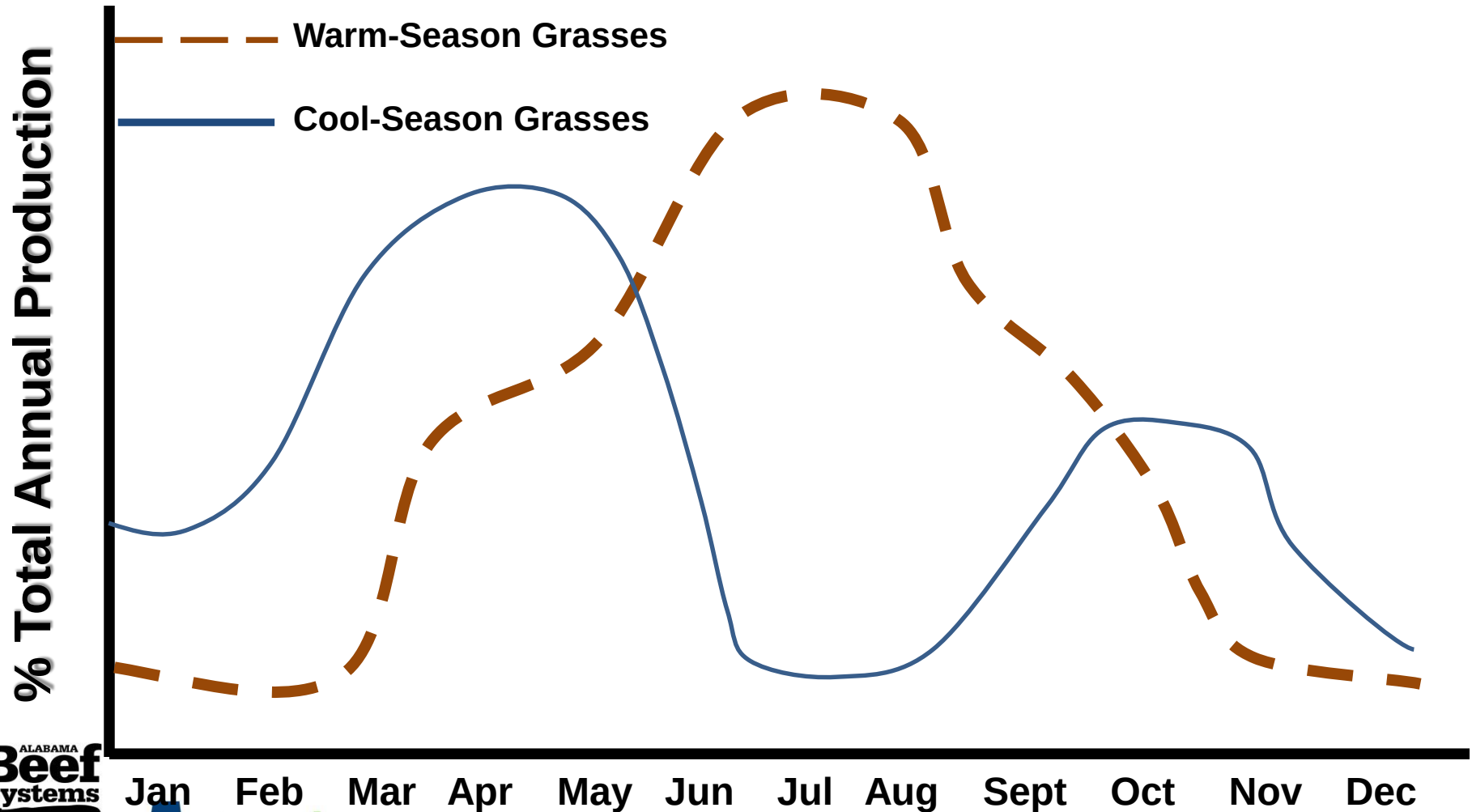
- Four compartments:
 - Reticulum
 - Rumen
 - Omasum
 - Abomasum – true stomach



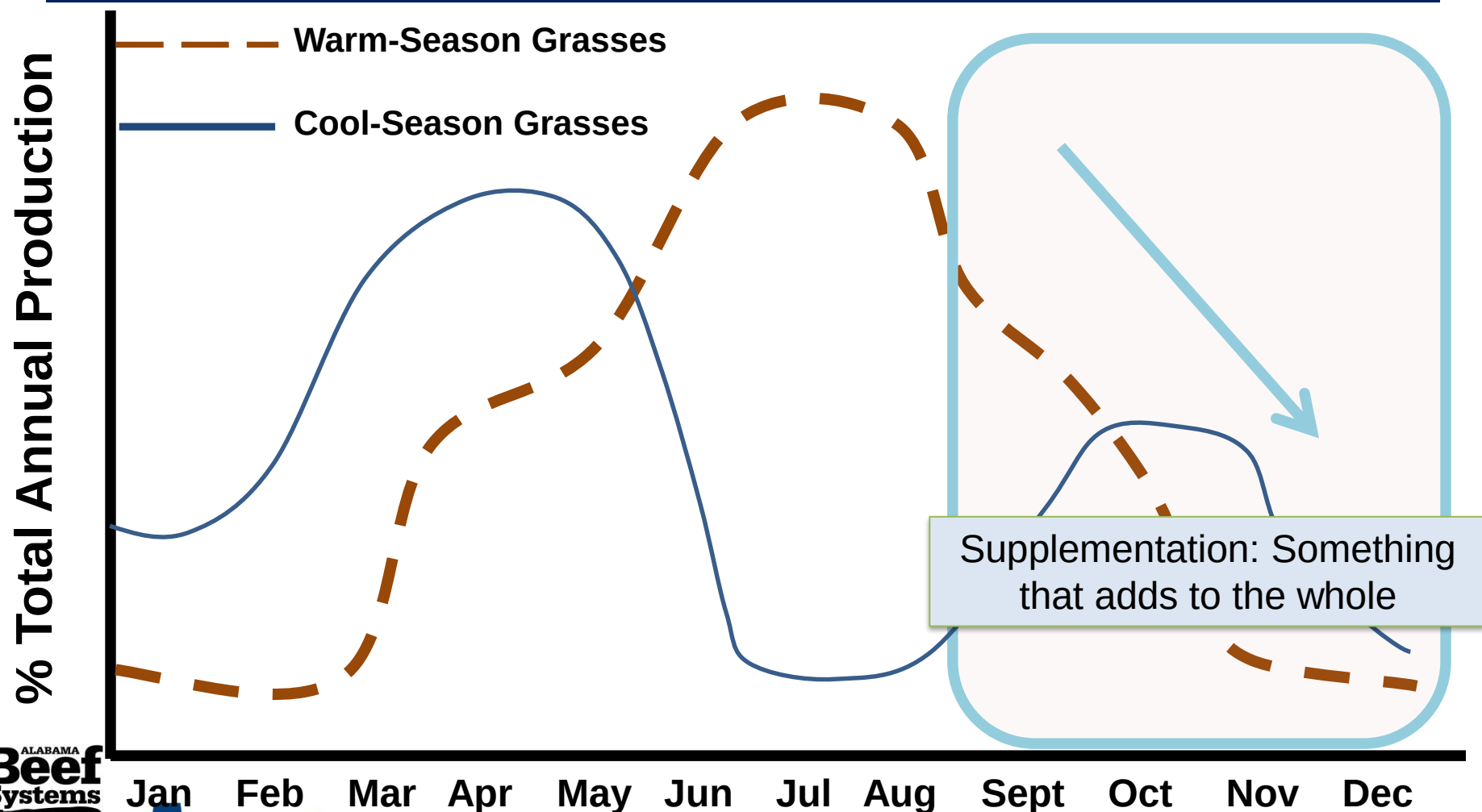
We can meet the majority of our nutritional needs through grazed pasture.



Maximize the Number of Grazing Days Per Year



When Forages Fall Short...



Supplementation: Something that adds to the whole

Realistic Winter Feeding Goals

- Conserved forages
 - 60 days of feeding
- Don't guess - test
- Feed supplements
 - Energy is typically most limiting, not protein



Forage Quality Effects Dry Matter Intake

Hay Quality	Class of cattle	Dry matter capacity, % of BW
Low quality (less than 52% TDN, 8% CP)	Dry cows	1.5
	Lactating cows	2.0
Average quality (52 to 56% TDN, 9 - 12% CP)	Dry cows	2.0
	Lactating cows	2.3
High quality (> 56% TDN, 12% CP)	Dry cows	2.5
	Lactating cows	2.7

**Average is
2.0 to 2.5%
of BW**

Systems for Supplementing



Feed Examples

- Most individual feeds or commercial blends are comprised of byproducts of row crop production

Corn

Whole shell corn
Cracked corn
Dried distillers
grains
Corn gluten feed

Peanut

Peanut hulls
Peanut skins

Soybeans

Soybean hulls
Soybean meal

Cotton

Whole cottonseed
Cottonseed meal
Cottonseed hulls

Don't Short the Small Stuff - Minerals



A SYSTEMS APPROACH TO NUTRITION



Body Condition Scoring

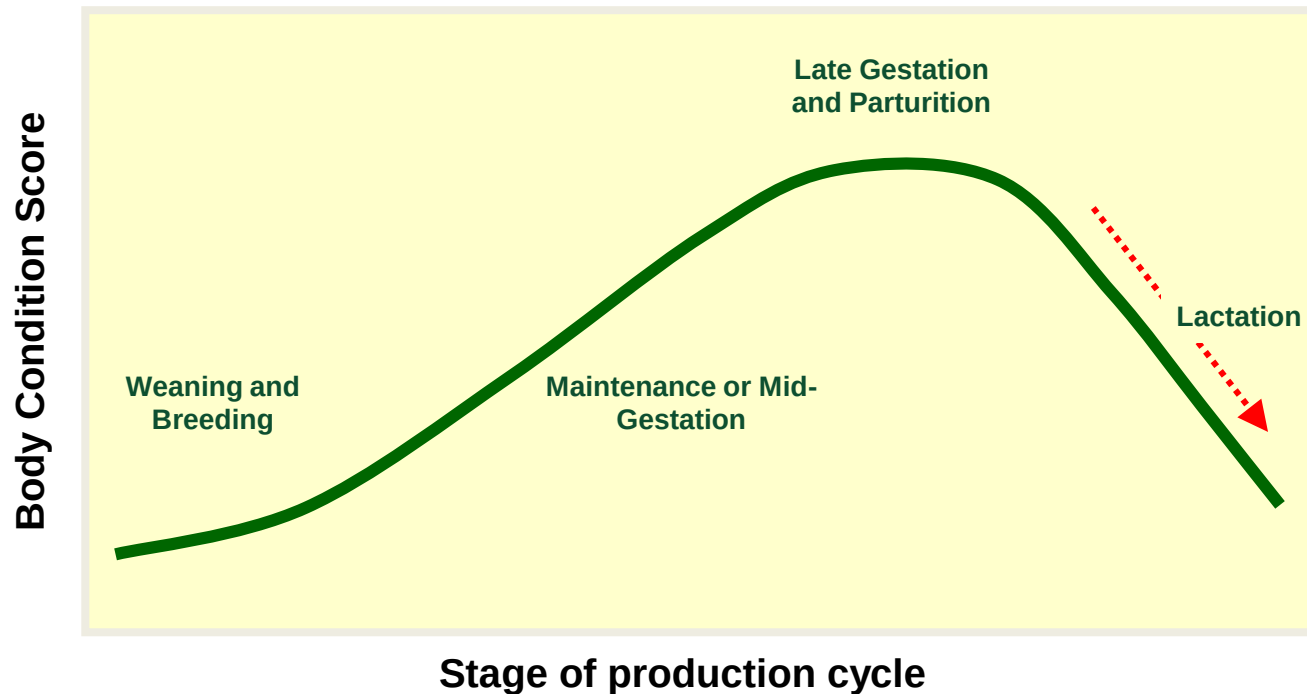
- A change in **one body condition** score is about **75-100 lb of body weight**

Table 1. Relationship of body condition score to beef cow performance.

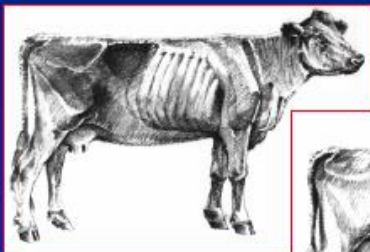
BCS	Preg. Rate (%)	Calving Interval (days)
3	43	414
4	61	381
5	86	364
6	93	364

p. 37-39 – Beef Handbook

Body condition fluctuates with stage of

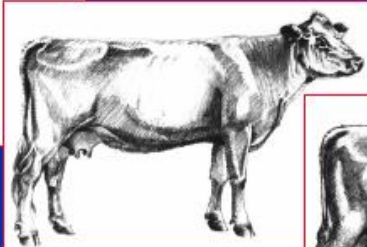


Effect of BCS at breeding on % Cycling



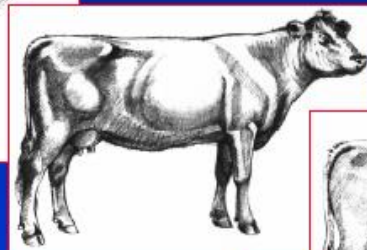
CS <3.5

25%



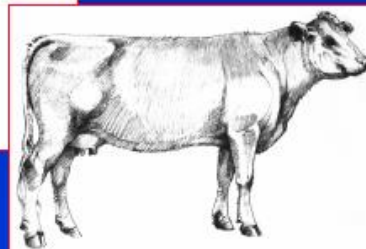
CS 4-4.5

40-48%



CS 5-5.5

58-72%



CS 6

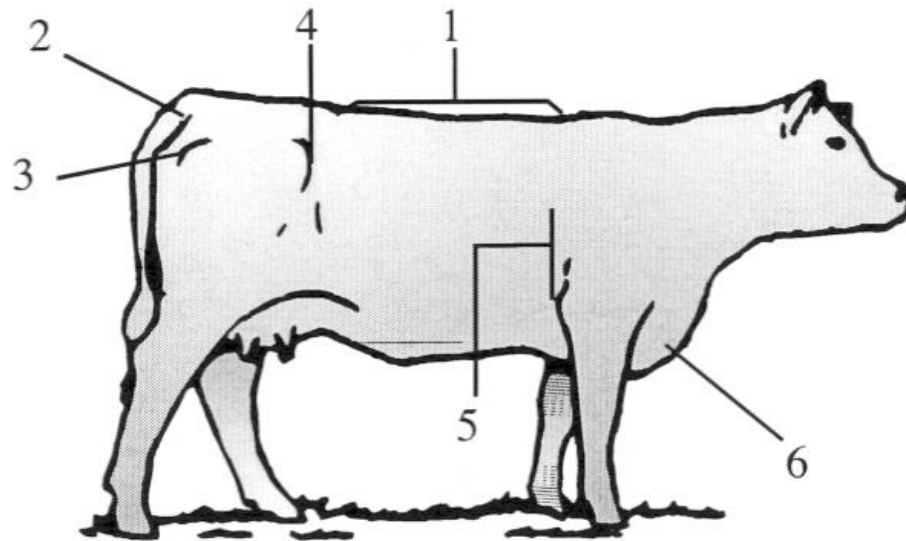
80% or more



www.iowabeefcenter.org

Areas useful for visually determining BCS in beef cows

(Oklahoma State University)



- | | | |
|--------------|----------|------------|
| 1. Back | 3. Pins | 5. Ribs |
| 2. Tail Head | 4. Hooks | 6. Brisket |

Reference table for body condition scores

Reference point	1	2	3	4	5	6	7	8	9
Physically weak	Yes	No	No	No	No	No	No	No	No
Muscle atrophy	Yes	Yes	Slight	No	No	No	No	No	No
Outline of spine visible	Yes	Yes	Yes	Slight	No	No	No	No	No
Outline of ribs visible	All	All	All	3-5	1-2	0	0	0	0
Outline of hip & pin bones visible	Yes	Yes	Yes	Yes	Yes	Yes	Slight	No	No
Fat in brisket and flanks	No	No	No	No	No	Some	Full	Full	Extreme
Fat udder & patchy fat around tail head	No	No	No	No	No	No	Slight	Yes	Extreme





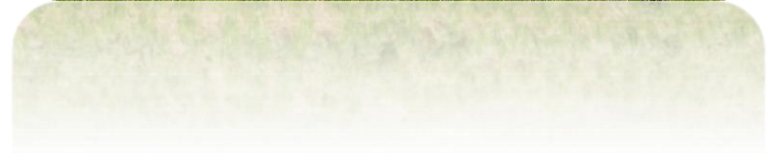
A Defined Calving Season



- Similar stage of production on a year-round basis
- Better meet nutritional needs
- Match needs with forage systems

Meeting Nutritional Needs

- ✓ Cow Weight
- ✓ Stage of Production
- ✓ Forage Quality
- ✓ Feed Quality



Questions?

Website

www.alabamabeefsystems.com

www.secattleadvisor.com

