Beef Cattle Success

10/23/2025

Right for cattle. Right by you.

Elanco™

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#CVMC25

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Overview

- Know your Client
  - Plan – Purpose - Person
- Beef Life Cyle
  - Cost of Disease and Pathogens
- Lifetime Immunity
  - Rule of 1's
- Modified Live & Killed Vaccines in Breeding Herds
  - Luteal Cells & Progesterone
- Success Factors & Opportunities
  - Nutrition and BCS
- Health Opportunities
- When & What
- Fly Control & Parasites
  - Options
- Preconditioning Calves
  - Potential, - Considerations - Economics

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Right Practices - Right Products- Right Animals Right Time

Does one size fit all - NO

..IT Depends

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Defining Your Clients Plan

What Sector of the Cattle Industry are they in?

(Define The Product)

- Trader
- Commercial
- Seed Stock
- Elite Breeder

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Defining Their Purpose

What is their reason for owning cattle?

(Define The Why)

- Livelihood / Profit
- Supplemental Income
- Means to an end: Land / Tax / Investment
- Generational / Family Business
- Lifestyle / Hobbie

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Defining the Person

What makes them tick?

(Define The Philosophy)

- Precision
- Pride
- Profit
- Practical
- Passive

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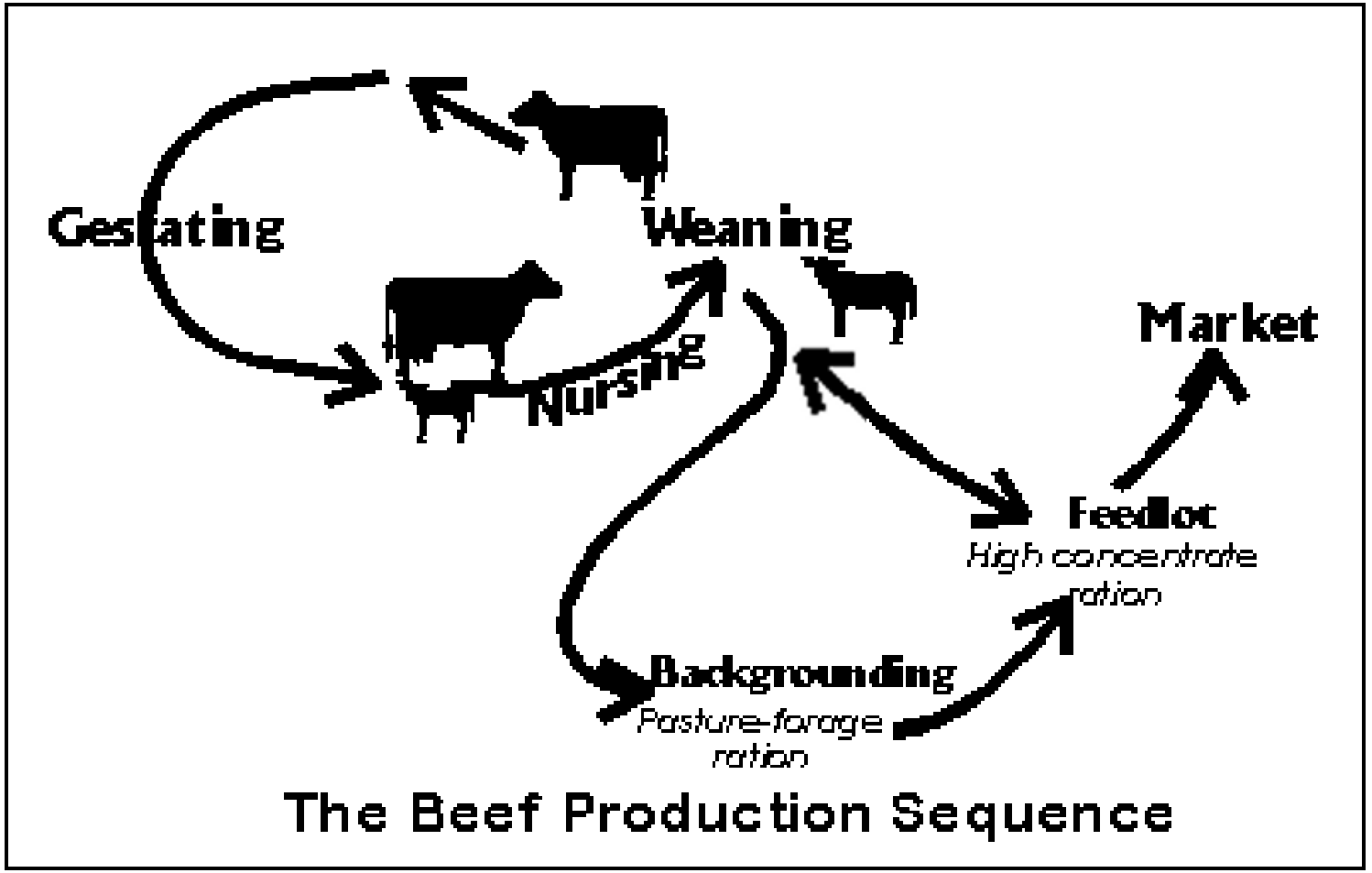
The Beef Cattle Lifecycle



https://animalbiosciences.uoguelph.ca/~gking/Ag_2350/beef.htm

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The Cost of Infertility

- **Open Cows**
- Recently (2020), we projected a loss of **$6.25** per exposed cow for every **1% decrease in pregnancy rate**, with an estimated gross loss of $2.8 billion annually in the United States due to pregnancy failure in beef females.[1]

- If undetected (no preg checking) - One Year Carrying Costs + Loss of sale of calf
- $400 + $2,000 = $**2,400 (over 100 hd** = $24 per Head)

OR

- Replacement Cost of a Bred Cow less Salvage Value of the open cow
- $3,000 – $2,000 = **$1000** (over 100 hd = $10 per Head)

[1]Mercadante, Vitor & Wege Dias, Nicholas & Timlin, Claire & Pancini, Stefania. (2020). 375 Economic Consequences of Pregnancy Loss in Beef Cattle. Journal of Animal Science. 98. 124-124. 10.1093/jas/skaa278.226.

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The Cost of BRD

- **Bovine Respiratory Disease**
  - Most common disease among feedlot cattle
  - Costs more than $1 billion annually[1]

- While **death loss** is a primary concern, the economic impact of a pull (**morbidity**) can be even more costly
  - Reduced average daily gain
  - Additional demands on labor resources
  - Increased treatment & retreatment costs

[1] Loneragan GH, Dargatz DA, Morley PS, Smith MA. Trends in mortality ratios among cattle in US feedlots. Journal of the American Veterinary Medical Association. 2001 Oct 15;219(8):1122-7.

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Bovine Reproductive Risk Factors

Bovine reproduction is a product of complex interactions between nutrition, management, genetics, environmental factors, and pathogens.

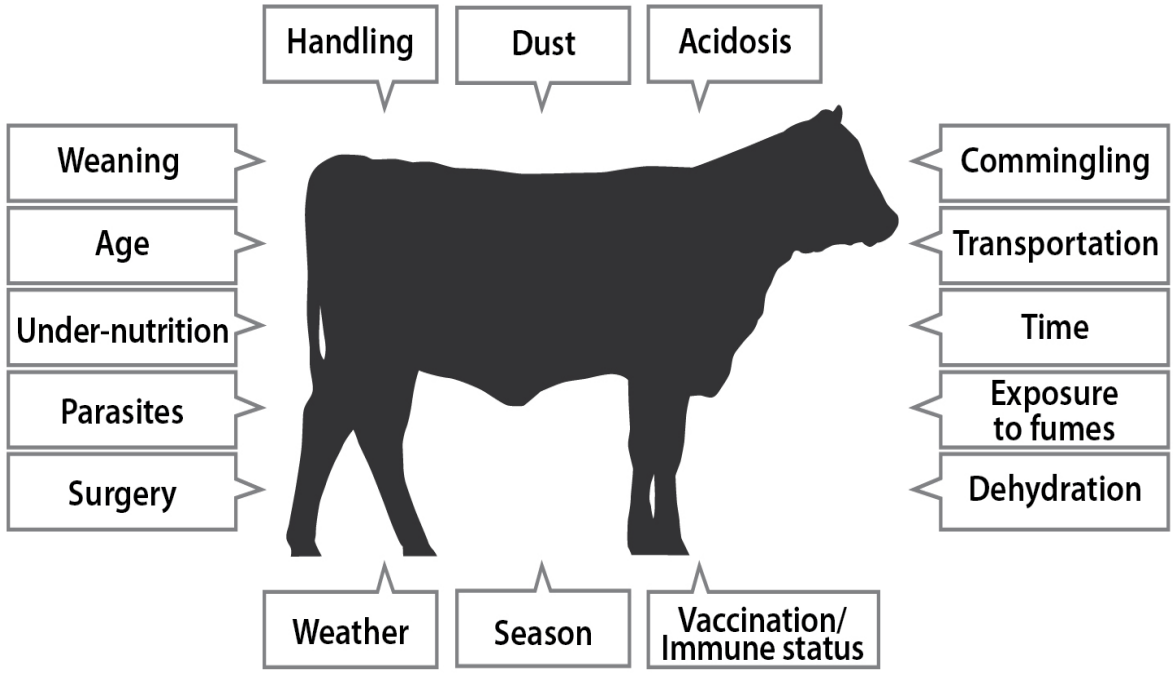
- **Bulls**
  - Sperm Quantity/Quality/Motility
    - Genetics, fever, toxins, trauma, infection
  - Competition
  - Bull Power
  - Bull Libido
  - Physical Condition
  - Trichomoniasis *(Regulated in most states)*
  - **Vibriosis**(Campylobacter)

- **Cows**
  - Nutrition
  - **Leptospirosis**
  - **Vibriosis** (Campylobacter)
  - **Bovine Viral Diarrhea**
  - **Infectious Bovine Rhinopneumonitis**
  - Trichomoniasis *(Regulated in most states)*
  - Neospora
  - Brucellosis *(Regulated in all states)*

Others:
- Ureaplasma
- Salmonella
- Histophilus
- Mycoplasma
- Blue Tongue
- Chlamydophila
- Listeria
- Mycotic
- Trueperella
- Toxins
- Deltaproteobacterium

Patel N, Patel RK, Rajoriya JS, Ahirwaar MK, Hari R, Ojha BK. Bovine respiratory disease complex: A critical review. International Journal of Livestock Research. 2017;7(7):23-34.

BRD Risk Factors
A Multi-factorial Disease Complex



- Viral
  - Bovine Viral Diarrhea Virus (BVD)
  - Infectious Bovine Rhinotracheitis (IBR)
  - Parainfluenza 3 (PI3)
  - Bovine Respiratory Syncytial Virus (BRSV)
  - Other less common viruses.
- Bacterial
  - Mannheimia Haemolytica
  - Pasteurella Multocida
  - Histophilus Somni
  - Mycoplasma Bovis
  - Other less common bacteria

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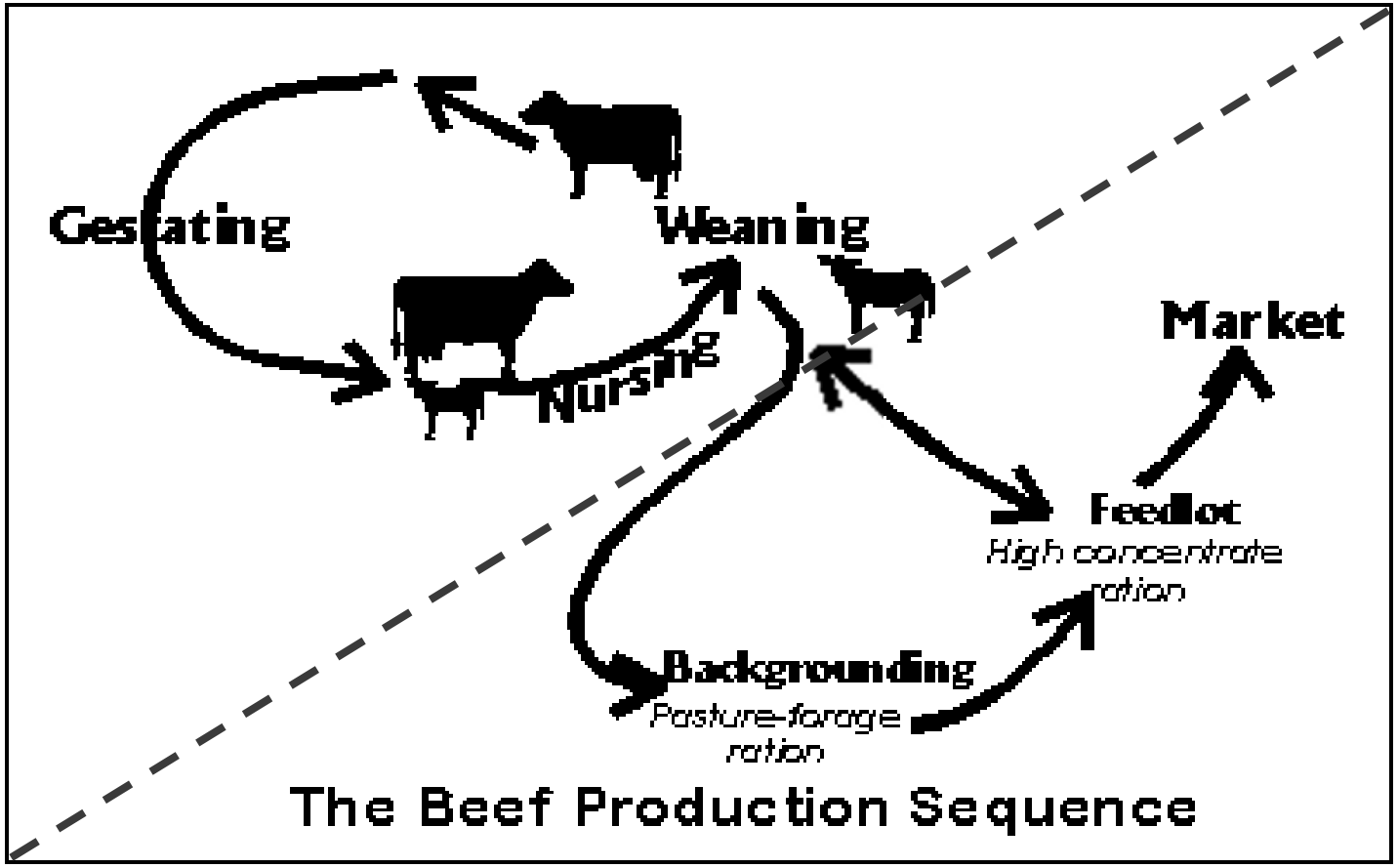
Lifetime Immunity – When to use what?



https://animalbiosciences.uoguelph.ca/~gking/Ag_2350/beef.htm

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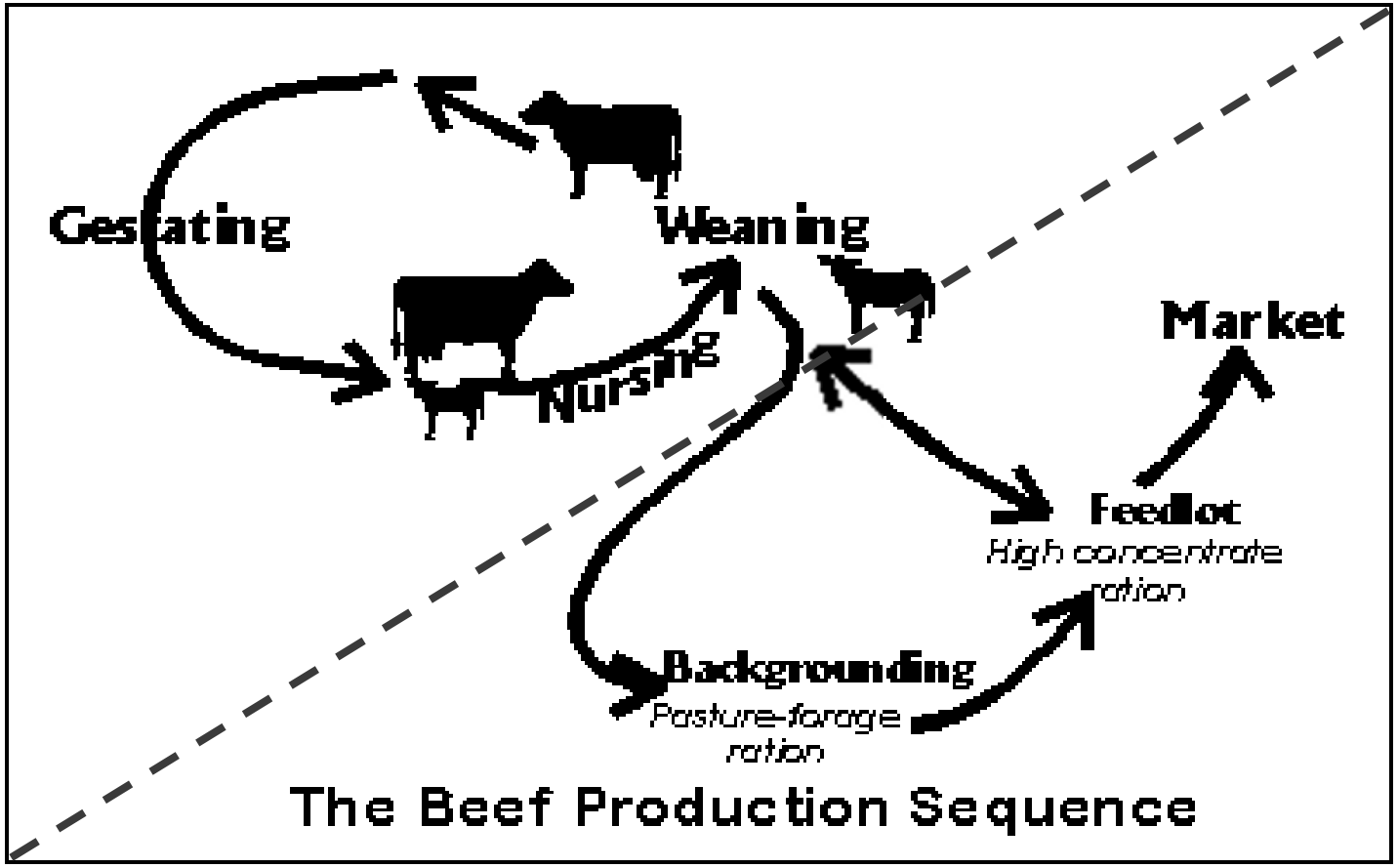
The Right Products in The Right Animals At The Right Time

- ✓ Breeding Herd
- ✓ > 1 Year of age
- ✓ Repro Disease
- ✓ Killed Vaccines



- ✓ Young Herd
- ✓ < 1 Year of age
- ✓ Resp Disease
- ✓ ML Vaccines

https://animalbiosciences.uoguelph.ca/~gking/Ag_2350/beef.htm

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For a Lifetime of Productivity and Health

- ✓ Breeding Herd
- ✓ > 1 Year of age
- ✓ Repro Disease
- ✓ **Killed Vaccines**

"The Rules of Ones"

One Vaccine For All

Killed is the Safe Choice

Lifetime Immunity

<1 – YOA – MLV Viral

Not for Calves Nursing Pregnant Cows

>1 – YOA - Killed Viral

- ✓ Young Herd
- ✓ < 1 Year of age
- ✓ Resp Disease
- ✓ **ML Vaccines**

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How do MLV and killed vaccines impact reproduction?

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1986 1990 1998 2013 2015

Virus damages the Corpus Luteum[1]

- Experimental IBR given 7-28 days post breeding
  - Corpus luteum damage/lesions
  - Immune cell invasion (macrophages, lymphocytes, plasma cells)
  - Virus not isolated but antigen detected

1. Miller and Van der Maaten. Experimentally induced infectious bovine rhinotracheitis virus infection during early pregnancy: effect on the bovine corpus luteum and conceptus. American Journal of Veterinary Research 1986 (47) 223-8.

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1986 | 1990 | 1998 | 2013 | 2015

Vaccination causes ovarian damage[1]

- Heifers vaccinated with a commercial IBR virus vaccine and ovaries collected 9 days later
  - Caused hemorrhage and death of ovarian tissue
  - Mononuclear lymphocyte invasion

1. Smith PC, Nusbaum KE, Kwapien RP, et al. Necrotic oophoritis in heifers vaccinated intravenously with infectious bovine rhinotracheitis virus vaccine during estrus. Am J Vet Res 1990;51:969–72.

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1986 | 1990 | **1998** | 2013 | 2015

Vaccination causes ovarian damage[1]

- Vaccinated naïve heifers with a commercial MLV containing BVD and BHV-1 (IBR virus)
- Collected ovaries 10 days post vaccination
  - Macrophages invasion in the ovaries
  - Lymphocytes increased in the ovaries
  - Ovary was BVD antigen positive

1. Grooms DL, Brock KV, Ward LA. Detection of cytopathic bovine viral diarrhea virus in the ovaries of cattle following immunization with a modified live bovine diarrhea virus vaccine. J Vet Diagn Invest 1998;10:130–4.

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1986 1990 1998 **2013** 2015

MLV impact the cycle, progesterone and conception rates in naïve heifers[1]

- Naïve heifers administered one dose of Vira Shield®, two doses of Vira Shield or, a MLV vaccine at synchronization
- MLV treated heifers had decreased AI conception rates, lower second service conception rates and 38% of them had abnormal cycles
- Vaccination shown to impact progesterone

1. Perry GA, Zimmerman AD, Daly RF, et al. The effects of vaccination on serum hormone concentrations and conception rates in synchronized naive beef heifers. Theriogenology 2013;79(1):200-5.

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1986 1990 1998 2013 **2015**

Females vaccinated with MLV had numerically lower pregnancy rates[1]

- Cattle vaccinated at 40 and 10 days pre-breeding with MLV or INV
  - MLV vaccinated cattle had a 20% lower preg rate than those vaccinated with a killed vaccine
- Cattle vaccinated at 61 and 31 days pre-breeding with MLV or INV
  - MLV vaccinated cattle had a 20% lower preg rate than those vaccinated with a killed vaccine
- Low cow number enrollment did not allow statistical significance

1. Walz PH, Edmondson MA, Riddell KP, et al. Effect of vaccination with a multivalent modified-live viral vaccine on reproductive performance in synchronized beef heifers. Theriogenology 2015;83(5):822-831.

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Does this information apply to a large, well vaccinated commercial herd?

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In 2016 a study of 1,304 animals comparing an inactivated vaccine (Vira Shield), a MLV vaccine, and controls (no vaccine) demonstrated that cows and heifers vaccinated with Vira Shield had:

6.5%

HIGHER ARTIFICIAL INSEMINATION CONCEPTION RATE[1]

WHY?

A HIGHER PERCENTAGE OF COWS CALVING IN THE FIRST

21 DAYS[1]

1. Perry GA, Larimore EL, Crosswhite MR, et al. Safety of vaccination with an inactivated or modified-live viral reproductive vaccine when compared to sterile saline in beef cows. J Vet Sci Res 2016;2:35-41.

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Question:

In well vaccinated herds,
does MLV vaccination cause viruses to be present in reproductive tissue and cause damage?

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Answer:

A Study at south Dakota State University

It's different in well vaccinated herds vs. naïve heifers…

- In a study done with 50 cows randomized into three groups, heat was synchronized, and cows were vaccinated at time of estrus with either Vira Shield, Titanium® or a competitive MLV vaccine[1]
- At days 14 and 28 post-vaccination, cows were determined to be free of viruses based on evaluation of uterine fluid, uterine biopsy and ovarian follicular fluid[1]

1. Elanco Animal Health. Data on file.

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Question:
Do MLV vaccines impact the estrous cycle?

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Answer:

A study was conducted to:

- Identify the mechanism of how an MLV vaccine decreases reproductive performance compared to an inactivated vaccine
- Better characterize how vaccinations can influence reproductive efficiency in beef cattle

91 beef cows, synchronized and vaccinated at time of ovulation[1]

- 70 cows vaccinated with an MLV vaccine
- 16 cows vaccinated with Vira Shield 6 VL5 HB
- 5 cows served as an untreated control group

1. Elanco Animal Health. Data on file.

GnRH
CIDR in

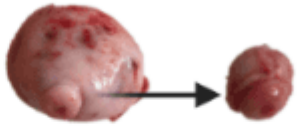
Day -10

n = 79

Vaccinate
Ultrasound

Day 0

n = 13 + 10
controls



Ovariectomies

Days 10-13

Day -3

PGF2a
CIDR out

Day 3

Ultrasound

Day 24

Study
completion

Every other day blood sampling

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Study Results

LUTEAL CELLS[1]

- **100% of cows vaccinated with Vira Shield** had a normal estrous cycle
- **Only 76% of cows vaccinated with an MLV vaccine** had a normal estrous cycle
  - 21% of MLV vaccinated cows regressed their corpus luteum (CL) prior to the time of maternal recognition of pregnancy (day 16 of the estrous cycle)
  - 3% of MLV vaccinated animals had a delayed increase in circulating concentrations of progesterone following ovulation

1. Elanco Animal Health. Data on file.

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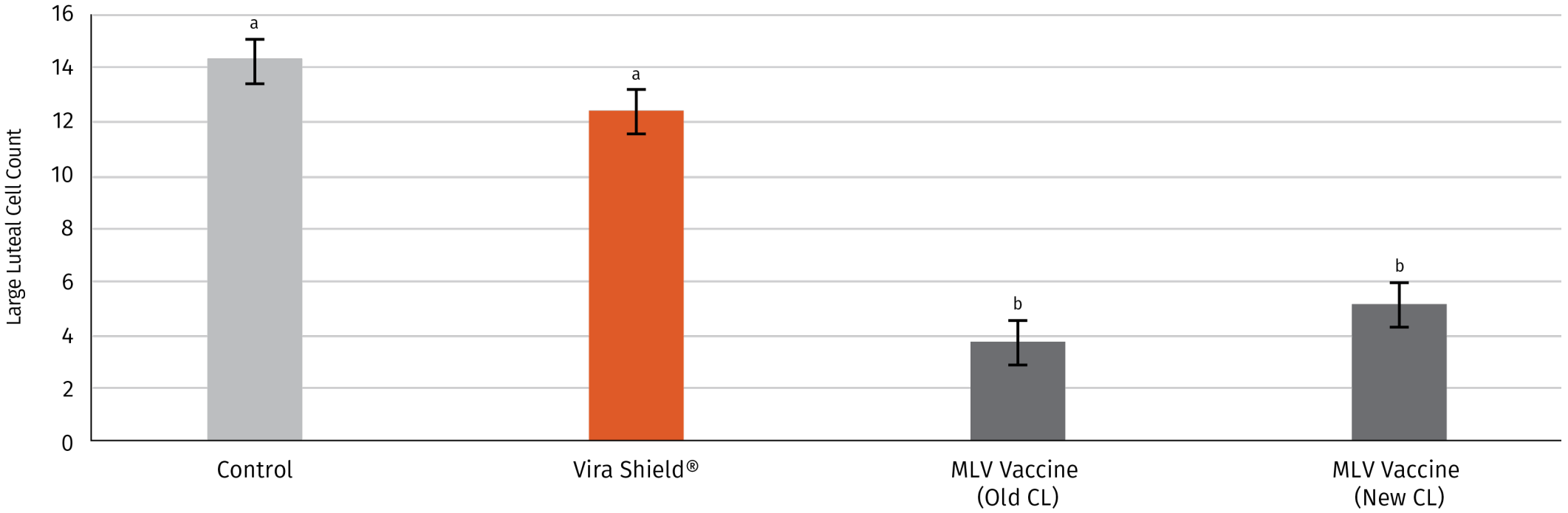
Large luteal cell numbers[1]

*** 80% of progesterone comes from large luteal cells**



A comparison of large luteal cell numbers between the presence of an old or new CL (cows that short-cycled) in females administered an MLV vaccine at AI with females administered Vira Shield and control animals.
[a,b] Means without a common letter are different; $P < 0.0001$.

1. Elanco Animal Health. Data on file.

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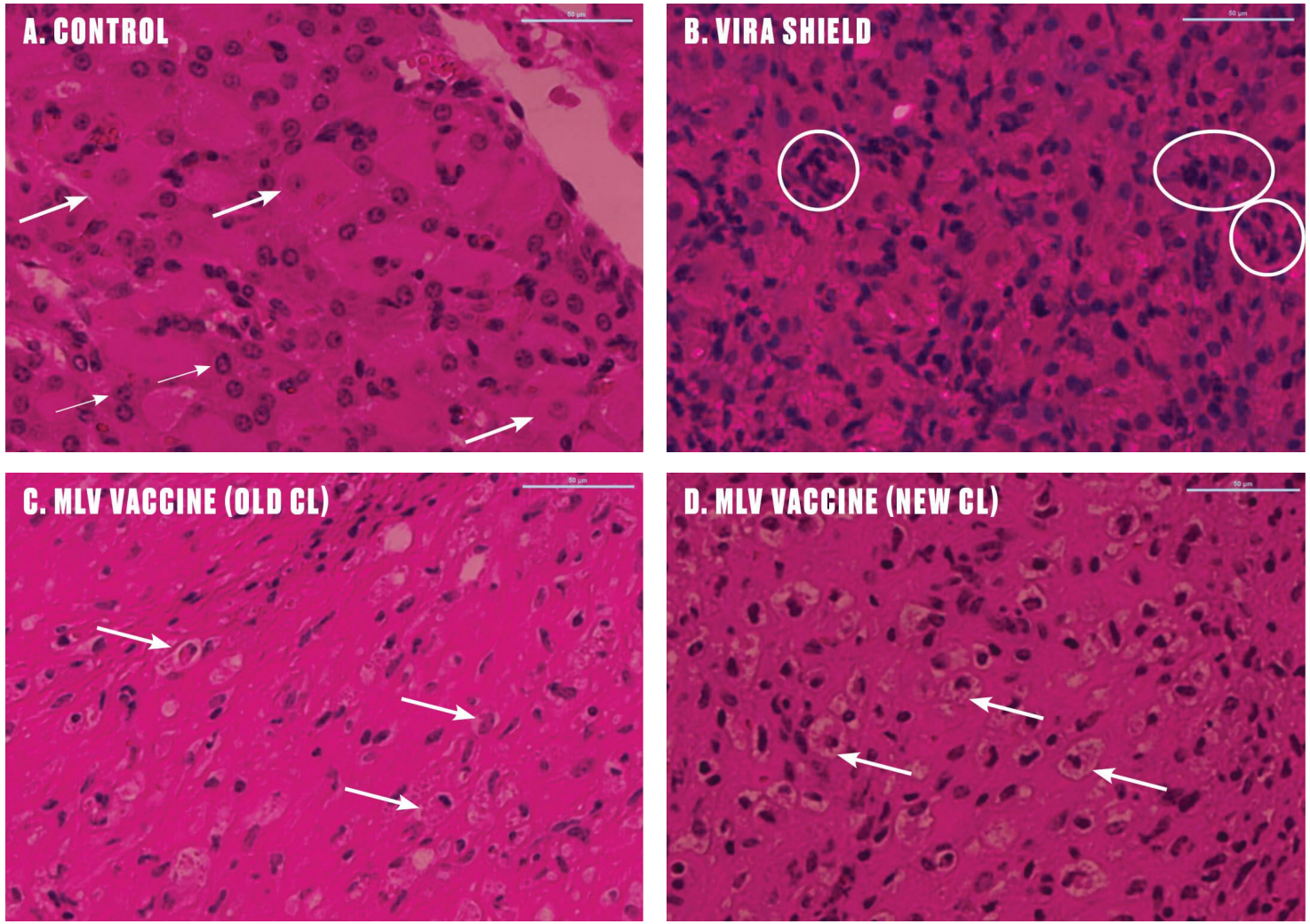
Corpus luteum histology[1]



A. Micrograph of a corpus luteum stained with hematoxalin and eosin in a control animal. Note the rounded, light pink appearance of the large luteal cells (large arrows), as well as their acentrically located round nuclei. Small luteal cells (small arrows) appear similarly with less cytoplasm.

B. Micrograph of a corpus luteum stained with hematoxalin and eosin from an animal treated with Vira Shield on day 0. An increased population of small non-luteal cells are visible and appear tightly clustered with darkly stained, non-spherical nuclei (circled), which may be plasma cells and/or fibroblasts.

C. Micrograph of a corpus luteum stained with hematoxalin and eosin from an animal treated with an MLV vaccine. There are an abnormally few number of cells present. Possible luteal cells pictured have a degenerative appearance with 'foamy' cytoplasm and oddly shaped nuclei (arrows).

D. Micrograph of a corpus luteum stained with hematoxalin and eosin from an animal treated with an MLV vaccine with large luteal cells depicted appearing to be apoptotic (arrows).

1. Elanco Animal Health. Data on file.

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LUTEAL CELLS[1]

- The number of large luteal cells in cows vaccinated with Vira Shield did not differ compared to controls ($P > 0.1$)

- Cows vaccinated with the MLV had fewer large luteal cells compared to the Vira Shield treatment and controls ($P < 0.0001$)
  - CL from MLV vaccinated animals also displayed abnormal luteal cells

1. Elanco Animal Health. Data on file.

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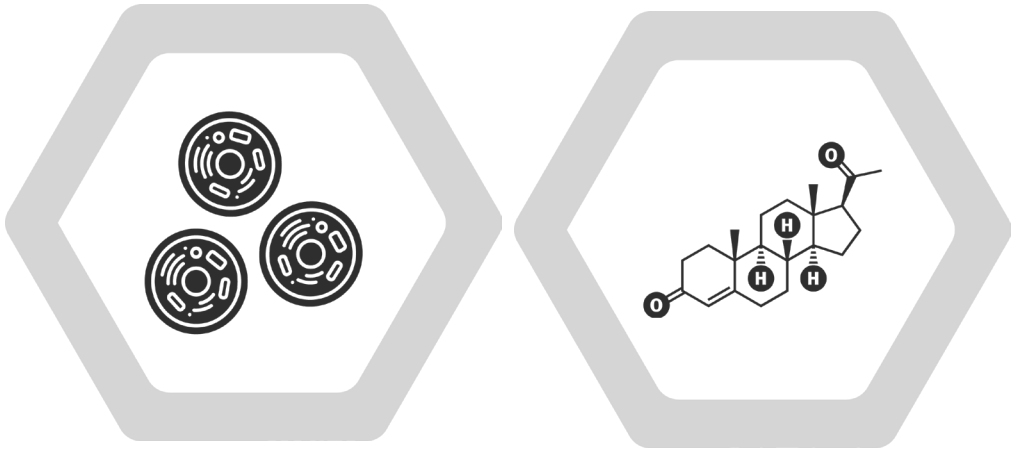

STUDY RESULTS

LUTEAL CELLS AND PROGESTERONE[1]

Large luteal cells are important to the production of progesterone as they produce **approximately 80%** of the progesterone produced by the CL

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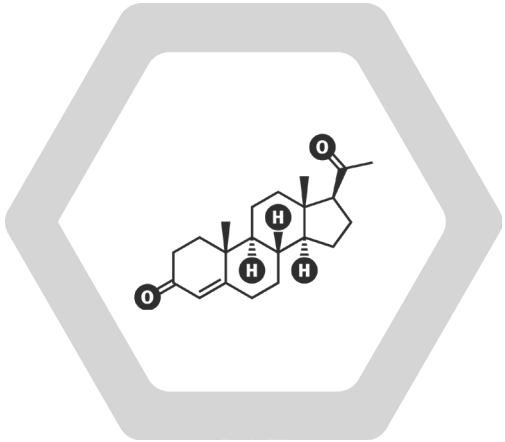
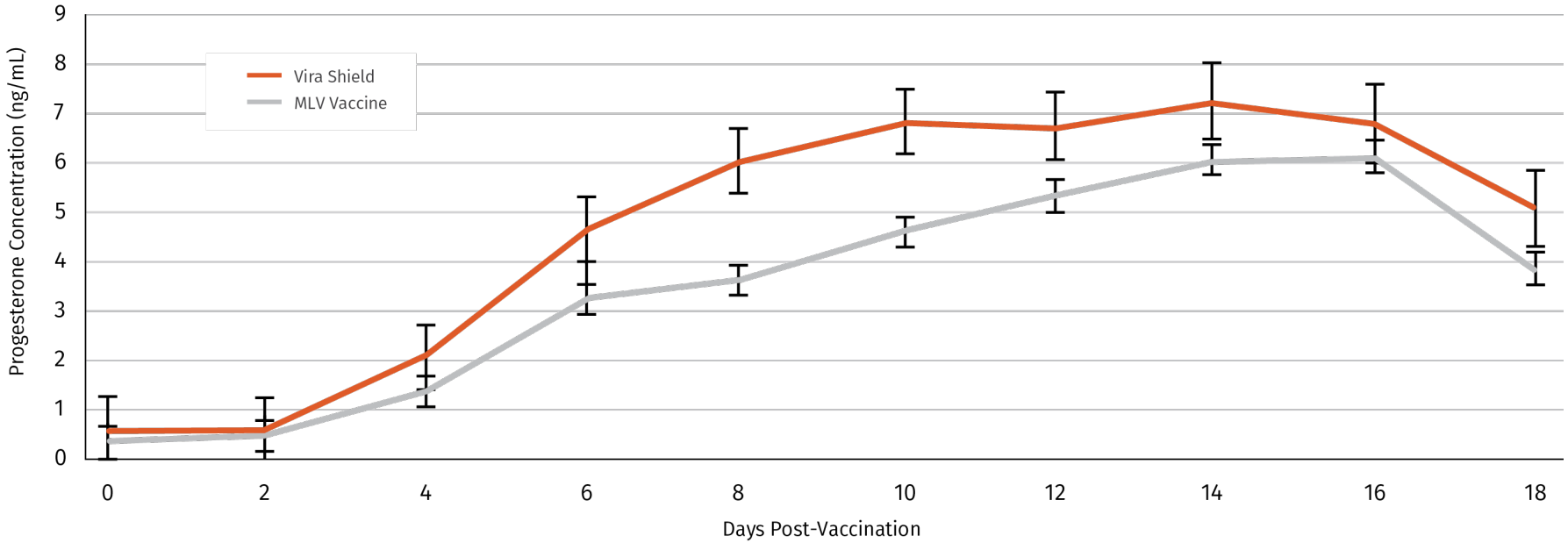
STUDY RESULTS
PROGESTERONE



Animals vaccinated with Vira Shield had higher progesterone concentrations compared to MLV vaccinated cows[1]



The influence of treatment on circulating concentrations of progesterone. Animals vaccinated with an MLV vaccine had overall decreased circulating concentrations of progesterone compared to animals vaccinated with Vira Shield. In addition, there was a treatment by time interaction on circulating concentrations of progesterone with MLV treated animals having decreased concentrations of progesterone compared to Vira Shield treated animals (P = 0.05).

1. Elanco Animal Health. Data on file.

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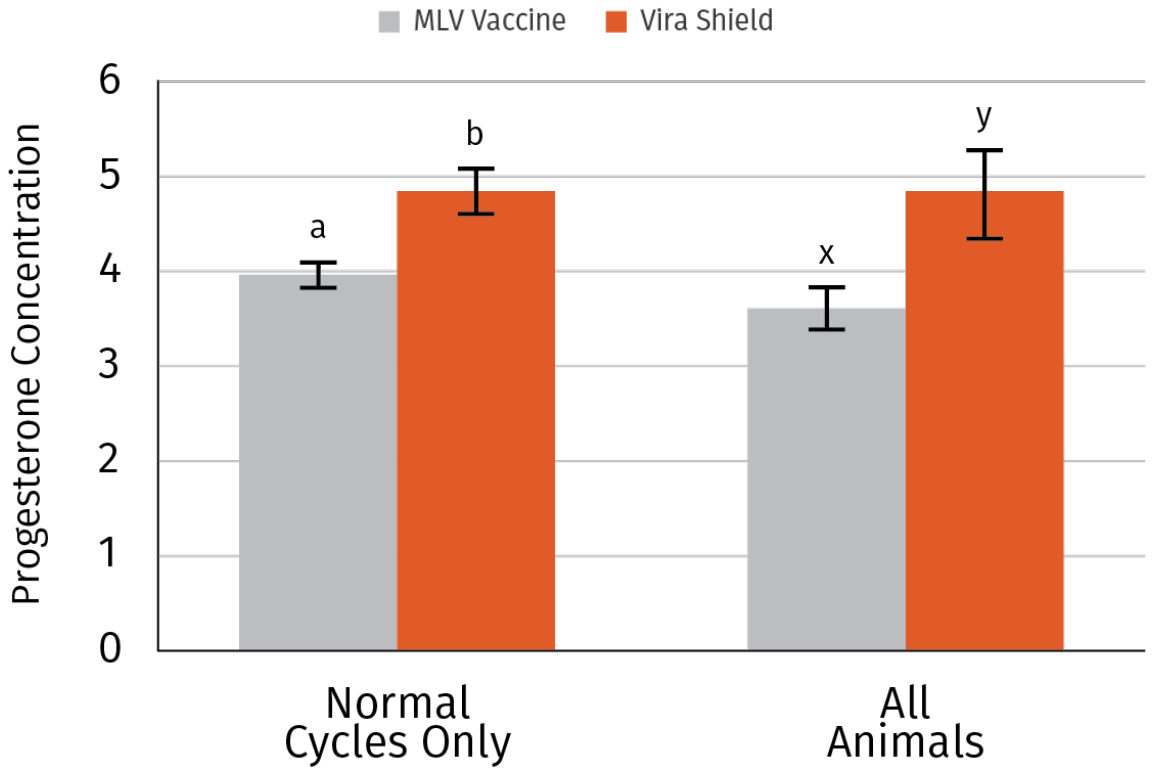
NORMAL CYCLE vs. MLV CYCLE Progesterone LEVELS



Vira Shield vaccinated animals had higher progesterone compared to the MLV

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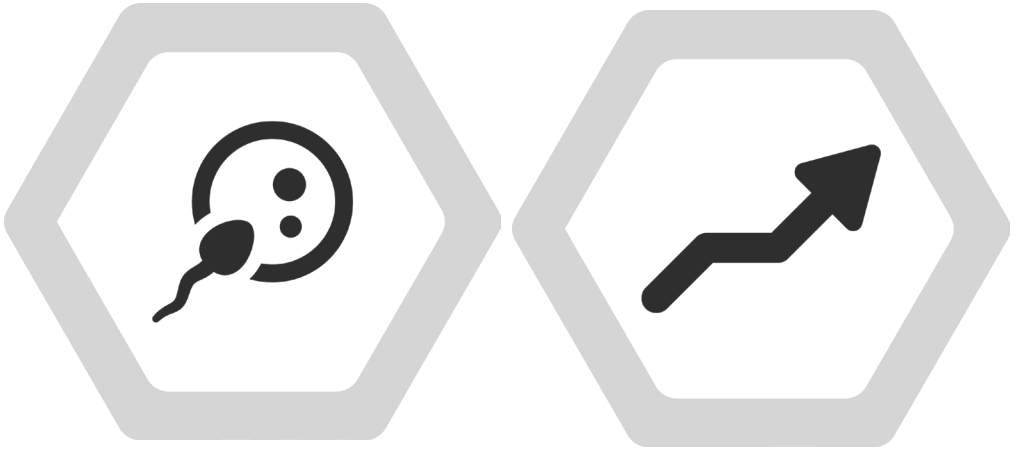
What was found?[1]



Beef cows vaccinated with the **inactivated vaccine (Vira Shield)** are set up for **Control Without Complication® in reproductive performance**

Beef cows vaccinated with the **modified live virus (MLV) vaccine** experienced **decreased reproductive performance**

1. Elanco Animal Health. Data on file.

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What was found?[1]

- Vaccinating cows with an MLV near breeding may alter the immune system, interfering with the ability to form a functional CL and decreasing progesterone concentrations, which is essential for pregnancy[1]
- This may explain:
  - decreased conception rates in cows vaccinated with an MLV vaccine near breeding[1]
  - why a higher percentage of cows vaccinated with Vira Shield calved in the first 21 days compared to an MLV vaccine

1. Elanco Animal Health. Data on file.

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Why it matters?

$2,912 PROFIT

The financial impact on a 100-cow herd by switching from an MLV vaccine to Vira Shield[1]

$2,550 MORE

from an extra three pregnant cows; based on July 2019 USDA data, a pregnant cow is worth approximately $850 more per head than an open cow

$362 MORE

from calves born earlier, yielding 315 lbs of extra weaning weight at $115/cwt

1. Perry GA, Larimore EL, Crosswhite MR, et al. Safety of vaccination with an inactivated or modified-live viral reproductive vaccine when compared to sterile saline in beef cows. J Vet Sci Res 2016;2:35-41.

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Beef Production Success Factors

- **Bovine production success is the result of complex interactions between nutrition, management, genetics, environmental factors, and pathogens.**
- **Nutrition**, both overfeeding and underfeeding, can impact fertility and breeding success as well as calf survival and performance.
- **Management factors** (e.g., **herd health programs**, biosecurity, breeding season, bull power, heifer development, and disease monitoring) can have significant impact on **fertility and breeding success** and are critical for disease prevention and management.
  - **Herd genetics** need to be balanced for both reproductive (maternal) traits including fertility, milk production, disposition, and calving ease, and growth (paternal) traits including weaning weights, yearling weights, and carcass traits. Additionally, genetics play a role in disease and parasite resistance and longevity.
- **Environmental factors** such as hygiene and sanitation, pen and pasture conditions, shelter, water source, **parasite exposure**, weather and facility design impact both **pathogen** exposure **host immunity**.

Patel N, Patel RK, Rajoriya JS, Ahirwaar MK, Hari R, Ojha BK. Bovine respiratory disease complex: A critical review. International Journal of Livestock Research. 2017;7(7):23-34.

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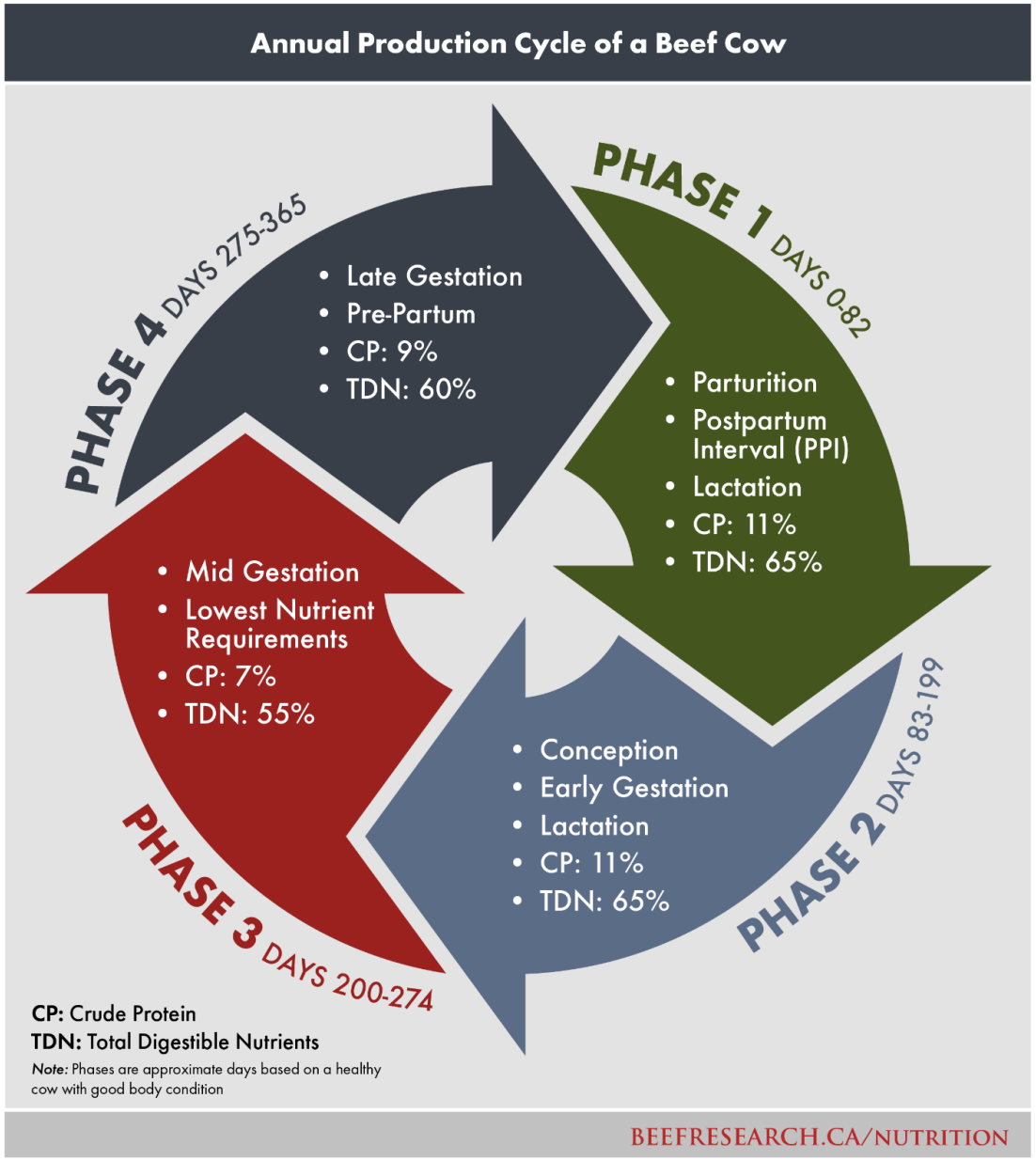
Opportunities

Pre - Calving

Nutrition
Vacc

Weaning

Preg Check
BCS
Culls -Rep
Weaning
Sell / Ret
Vacc
Para



Calving

Cow & Calf
Health
BCS
Involution
Udder
Scours
BRD

Branding

Breeding
Bulls
Turn Out
Vacc
Para

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Pre-Calving

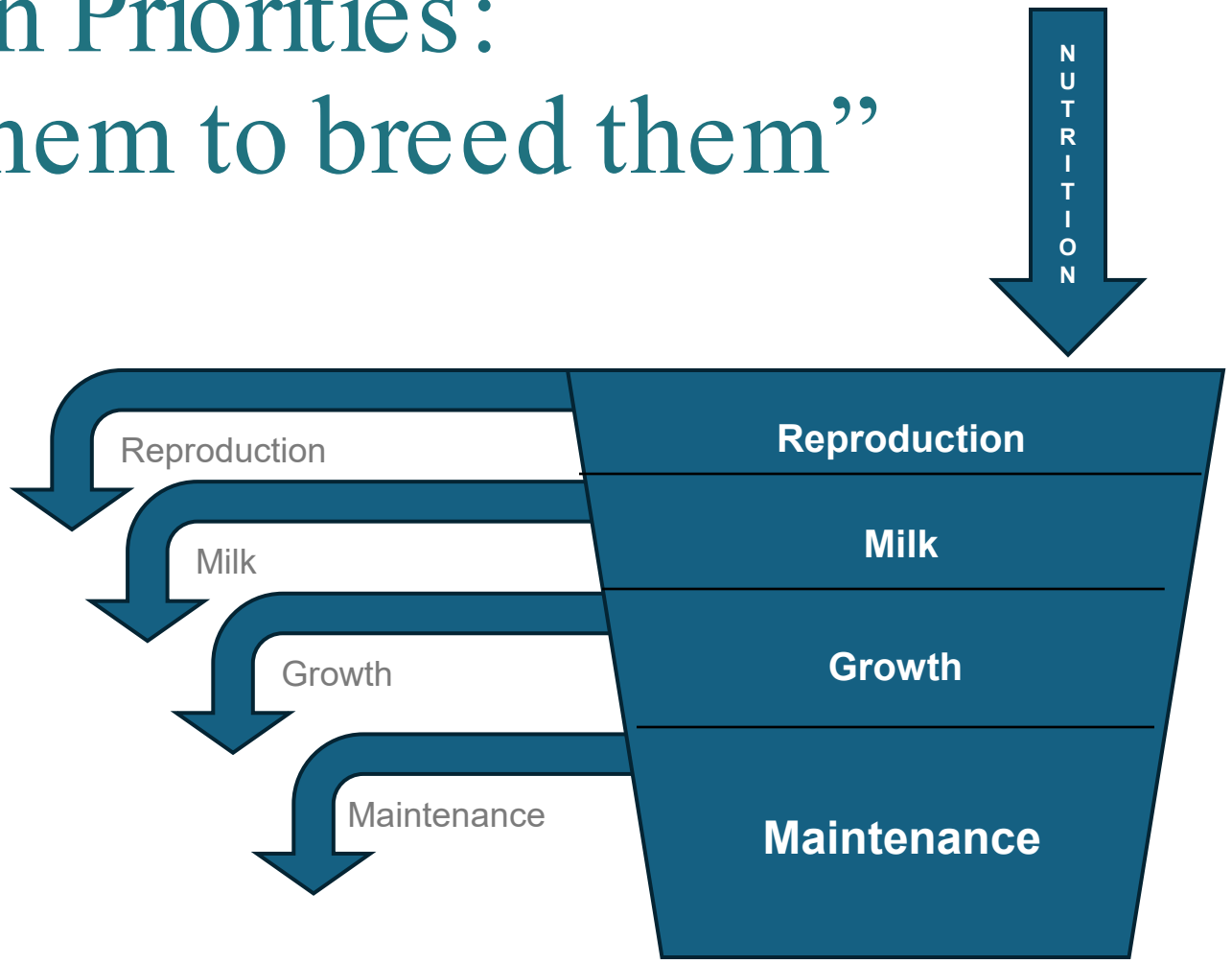
Nutrition – BCS

- 30 dys Prior PPI
- 30 dys Post CR

- **Immunity:**
  - **Vaccines**
    - Scours
    - Respiratory

- **Preparation**
  - Feeding
  - Colostrum
  - Electrolytes
  - Calf Warmer
- **Intervention**
  - Observation
  - Colostrum
  - Electrolytes
  - Calf Warmer

Nutrition Priorities: "Feed them to breed them"



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BCS Influences Reproduction

- Studies show optimal BCS scores can have a positive impact on **calving interval, estrus-cycling status and pregnancy rates**[1]
- Cows that are under conditioned at calving (BCS<5) take longer to cycle back and conceive compared to adequately conditioned cows (BCS 5 to 7)[2]
- Nutritional/reproductive **decisions determine profitability**
  - A system is needed to feed and manage cows properly. A BCS of 5+ (at least 14% body fat) at calving/through breeding is ideal for proper reproduction[3]
- Colostrum can be influenced as well, **with long-term consequences for health and performance**

First-service conception rate: BCS 4 = 36% vs. BCS 6 = 50%[4]
Overall pregnancy rate: BCS 4 = 64% vs. BCS 6 = 89%[4]

[1]Burns, M. (2014) Body Condition Scoring in Beef Cattle, is it important? University of Clemson, LF 01 - Rev/rep. May 2014 Livestock & Forages. Accessed on 08April2019. Available at: https://www.clemson.edu/extension/publications/files/livestock-forages/lf01-body-conditioning-in-beef-cattle.pdf

[2]Richards, M.W., J.C. Spitzer and M.B. Warner. 1986. Effect of varying levels of postpartum nutrition and body condition score at calving on subsequent reproductive performance in beef cattle. J. Anim. Sci, 62:300.

[3]Herd, D.B. & Sprott, L.R. (n.d.). Body condition, nutrition and reproduction of beef cows (B/EB-1526). College Station, Tx: Texas A&M AgriLife Extension. Accessed on 08April2019. Available at: http://agrilifecdn.tamu.edu/victoriacountyagnr/files/2010/07/Body-Condition-Nutrition-Reproduction-of-Beef-Cows.pdf

[4]Lake SL, Scholljegerdses EJ, et al. 2005. Body condition score at parturition and postpartum supplemental fact effects on cow and calf performance. *J. Anim. Sci*. 83:2908-2917.

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Why is BCS important?

- **Dystocia**
- **Colostrum** - quality and quantity
- **Calf vigor**
- **Milk production**
- **Calving interval** – ≤ 365 days for maximum profitability

Adapted from: 1) Kunkle, WE, Sand, RS, Rae, DO. Effects of Body Condition on Productivity in Beef Cattle. University of Florida Cooperative Extension Service. 1994. SP-144. 2) Rossi, J, Wilson, TW. Body Condition Scoring Beef Cows. UGA Extension. 2014. Bulletin 1308.

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Why is BCS important? (continued)

- **Postpartum interval – PPI** (days to 1st estrus)
  - Cow must conceive by 85 days postpartum to keep a 365-day calving interval
- **Pregnancy rate**
- **Calving percent**
- **Percent weaned**
- **Weaning weight**

Adapted from: 1) Kunkle, WE, Sand, RS, Rae, DO. Effects of Body Condition on Productivity in Beef Cattle. University of Florida Cooperative Extension Service. 1994. SP-144. 2) Rossi, J, Wilson, TW. Body Condition Scoring Beef Cows. UGA Extension. 2014. Bulletin 1308.

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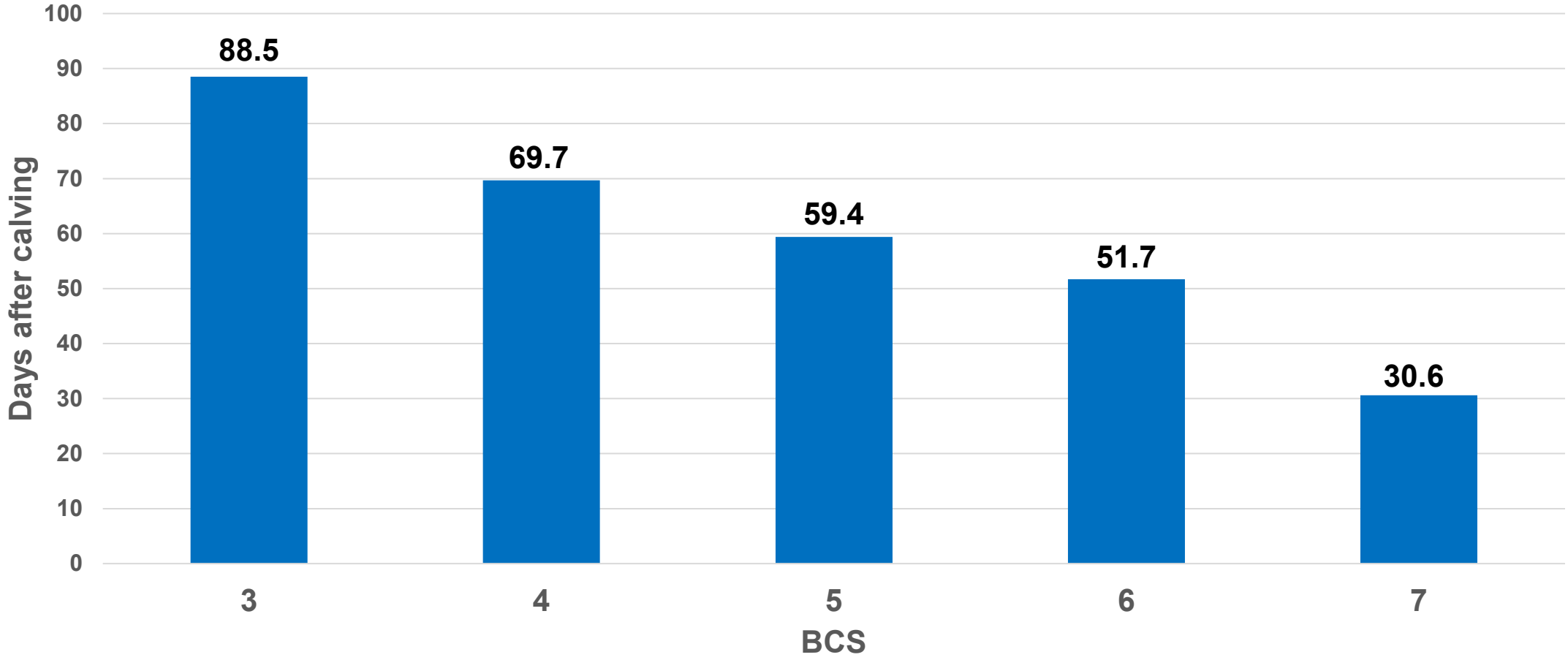
Effect of BCS on Postpartum Interval (days to 1st estrus)



Adapted from: Houghton, PL, Lemenager, RP, Horstman, LA, Hendrix, KS, Moss, GE. Effects of Body Composition, Pre- and Postpartum Energy Level and Early Weaning on Reproductive Performance of Beef Cows and Preweaning Calf Gain. Journal of Animal Science. 1990; 68(5): 1438-46.

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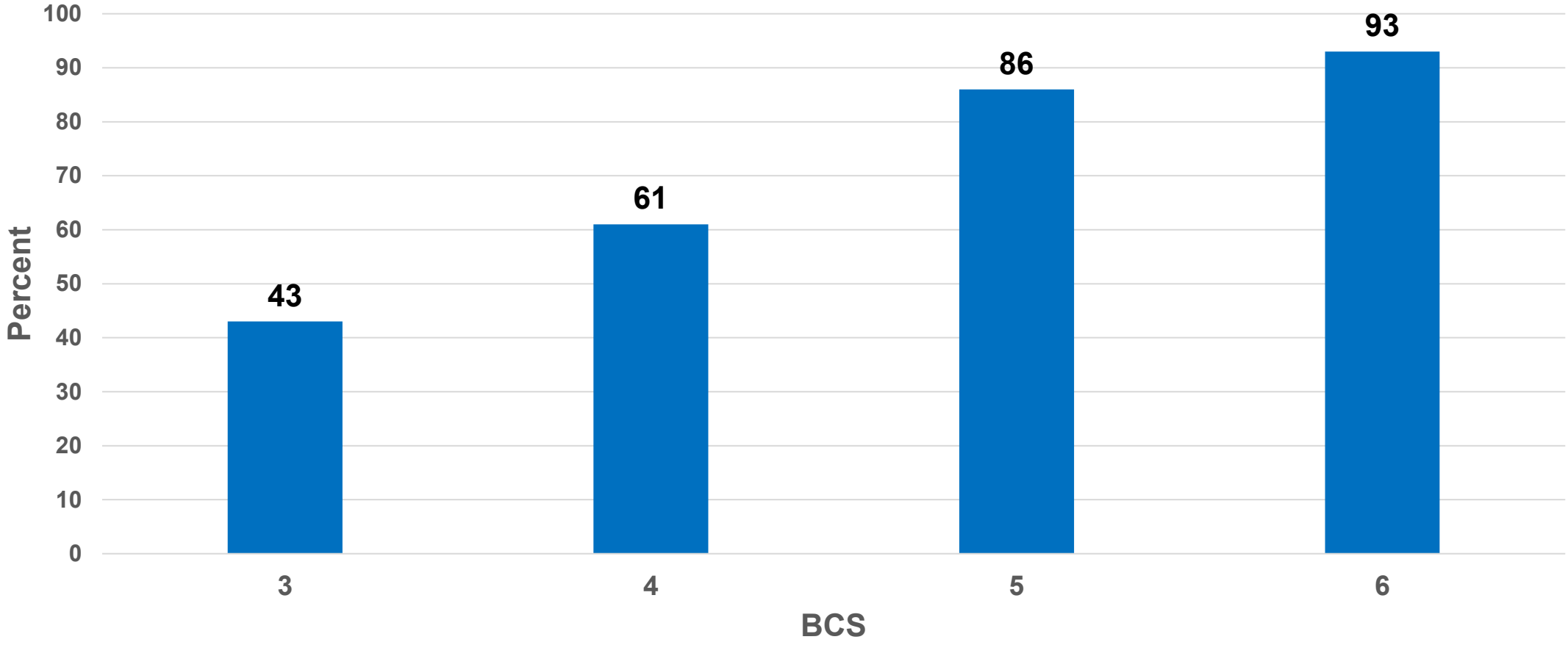
Effect of BCS on % Pregnant



Adapted from: Kunkle, WE, Sand, RS, Rae, DO. Effects of Body Condition on Productivity in Beef Cattle. University of Florida Cooperative Extension Service. 1994. SP-144.

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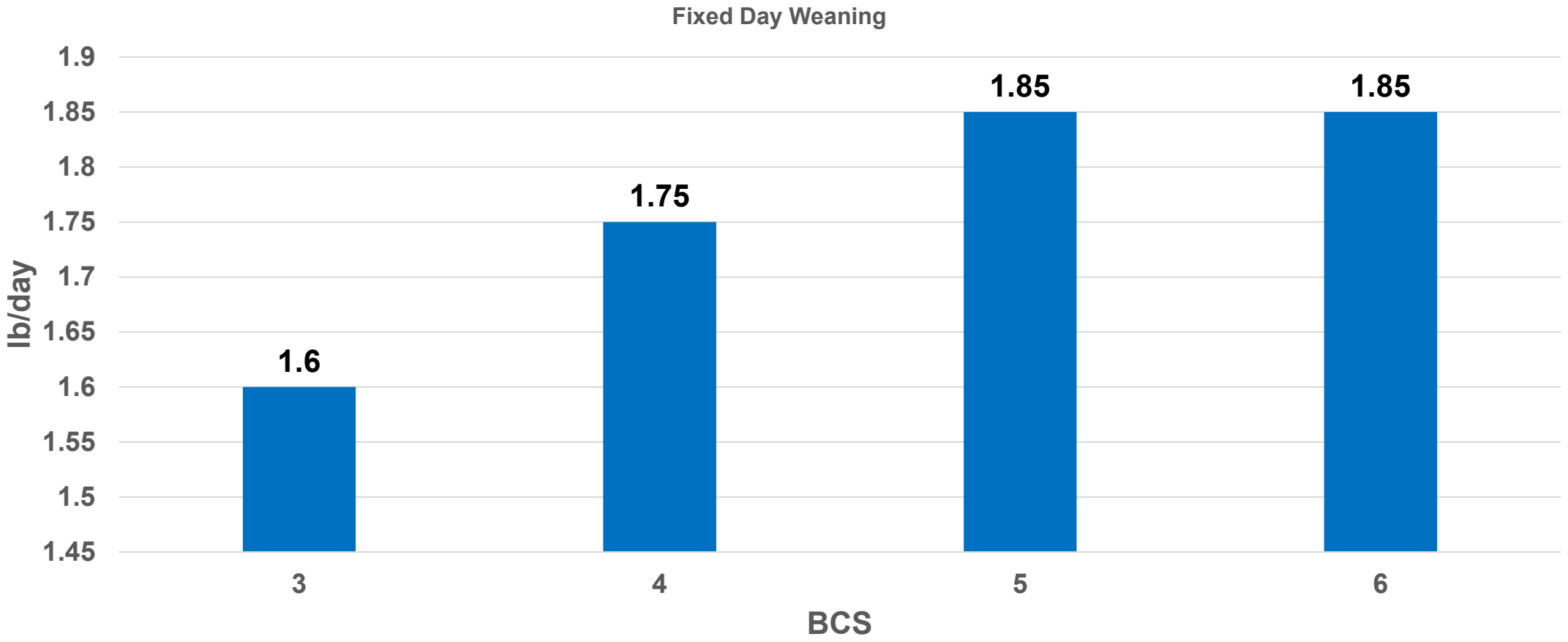
Effect of BCS on Calf Average Daily Gain



Adapted from: Kunkle, WE, Sand, RS, Rae, DO. Effects of Body Condition on Productivity in Beef Cattle. University of Florida Cooperative Extension Service. 1994. SP-144.

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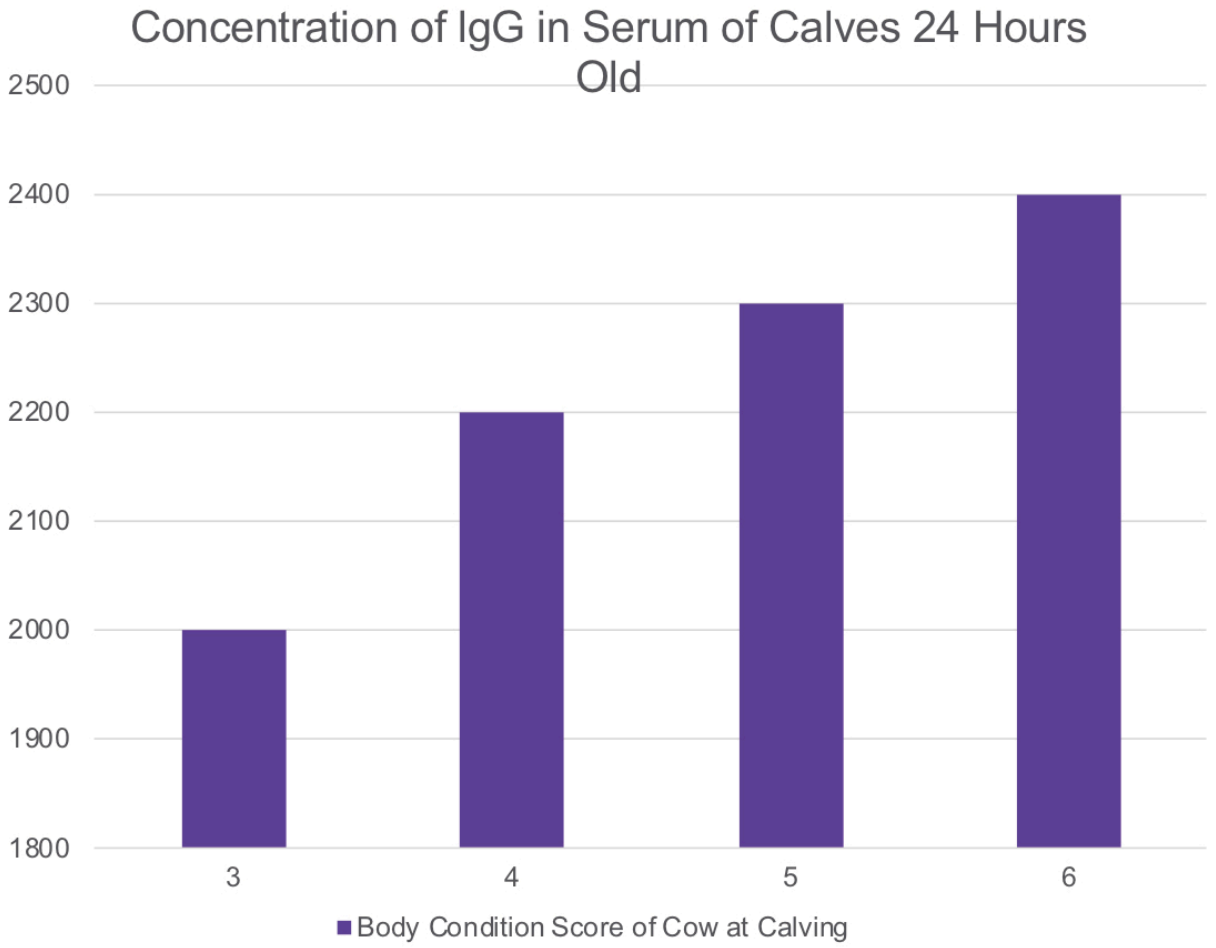
BCS and Colostrum

IgG in beef calves 24 hours after birth whose dams are in different body condition.

(Odde, K.G. 1997. Reproductive efficiency, precalving nutrition and improving calf survival. Proc. Bovine Connection, pg. 86-92)

Reproductive efficiency, pre-calving nutrition, and improving calf survival

(Odde, K.G. 1997. Reproductive efficiency, precalving nutrition and improving calf survival. Proc. Bovine Connection, pg. 86-92)



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BCS: Some Definitions

BCS is a **tool/management practice** that allows producers to estimate the energy of cows

BCS reflects **condition or fatness** of the animal[1]

With BCS, decisions can be made to **manage an individual or group** of cows separately. In addition, producers can save on overall feed cost[2]

[1]Guidelines for Uniform Beef Improvement Programs. 9th Edition. 2010. Beef Improvement Federation, Manhattan, KS
[2]Walker R (2017). Body Condition Score as a Tool for Cow Herd Management. Noble News and Views, September 2017. Noble Research Institute. Available at: https://www.noble.org/news/publications/ag-news-and-views/2017/september/body-condition-score-as-a-tool/

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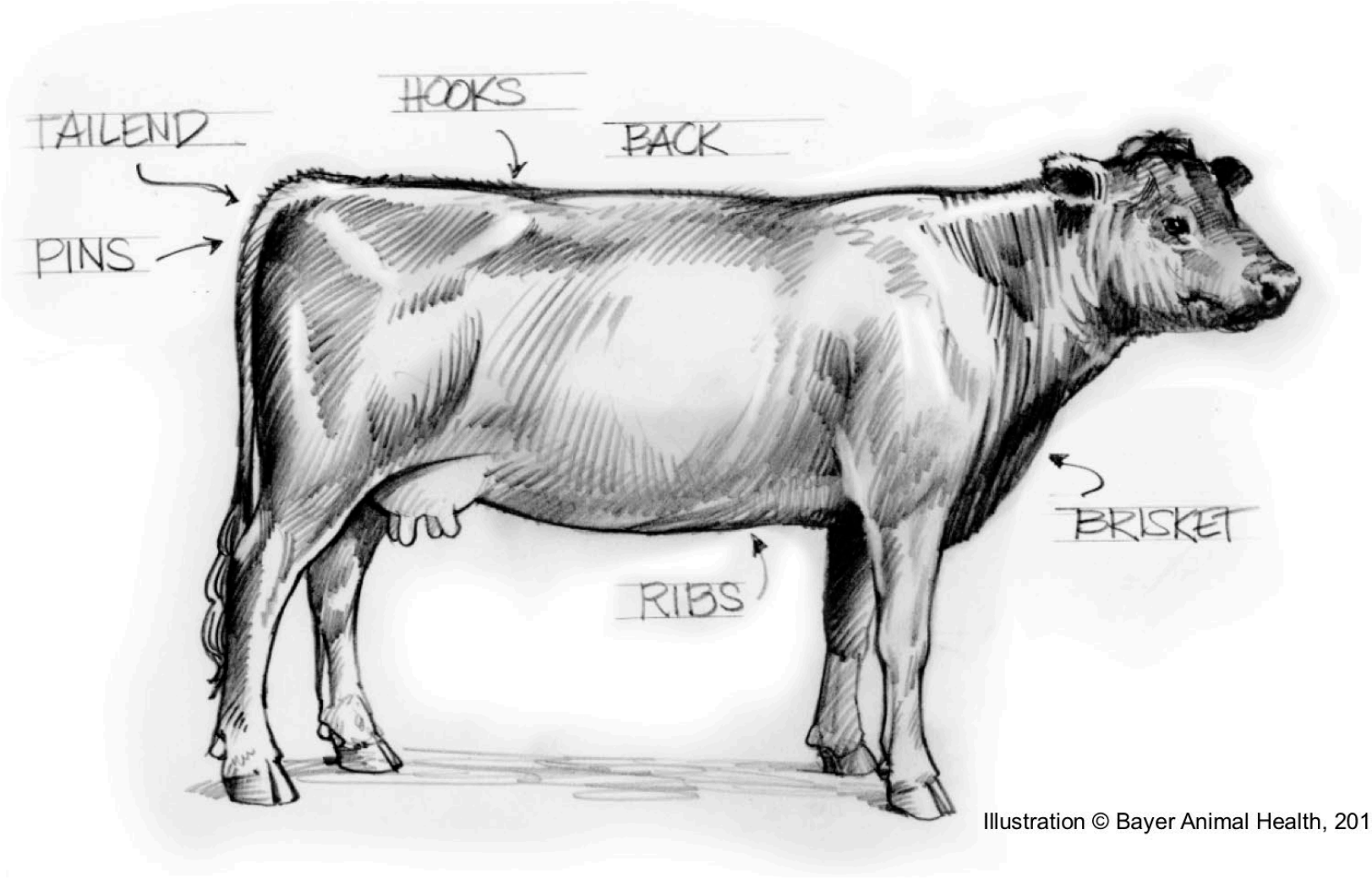
Key Areas for Evaluation on a Beef Cow



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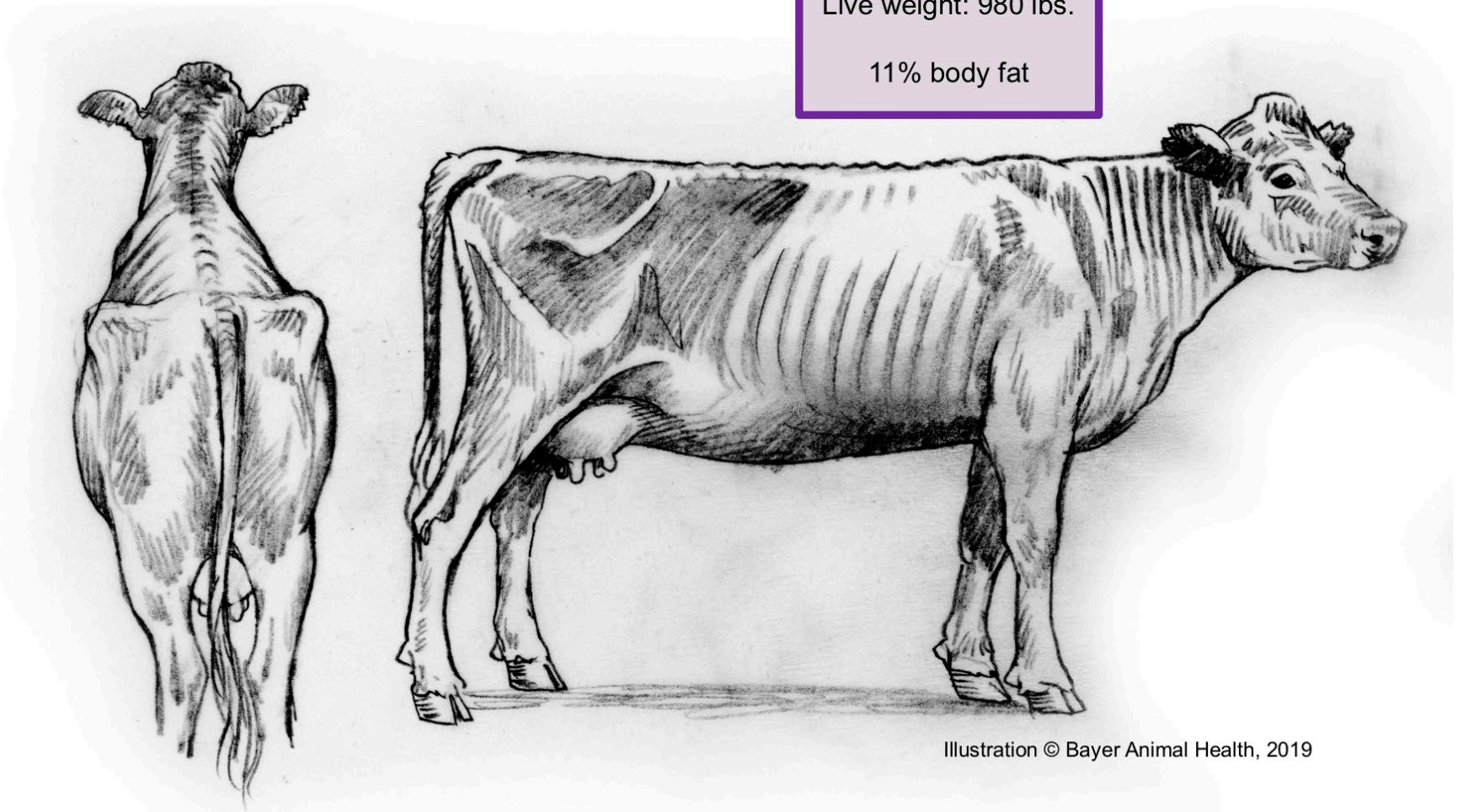
What BCS Looks Like

BCS = 3

Live weight: 980 lbs.

11% body fat

Backbone is easily seen. Spaces between spinous and transverse processes fairly pronounced. Ribs are easily seen. Angular dish to the rump.



Adapted from: Herd, DB, Sprott LR. Body Condition, Nutrition and Reproduction of Beef Cows. AgriLife Extension Beef Cows.1996; B-1526.

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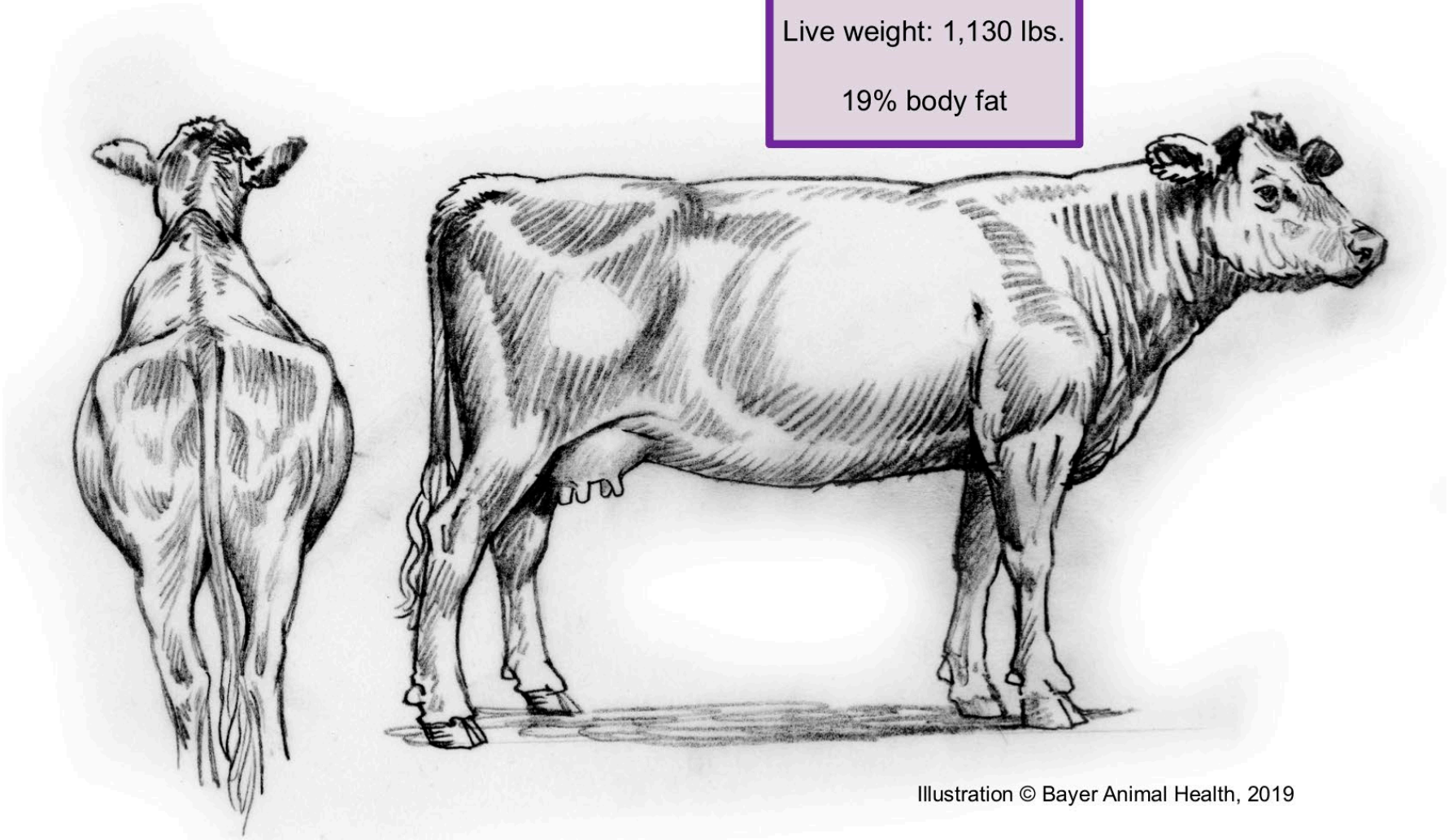
What BCS Looks Like

BCS = 5

Live weight: 1,130 lbs.

19% body fat

Back edge of 13th rib still seen, otherwise ribs are covered. Back is full but rounded. Para-lumbar fossa just visible. Rump is nearly full. Tail head fat increasing, but tail head visible.



Adapted from: Herd, DB, Sprott LR. Body Condition, Nutrition and Reproduction of Beef Cows. AgriLife Extension Beef Cows.1996; B-1526.

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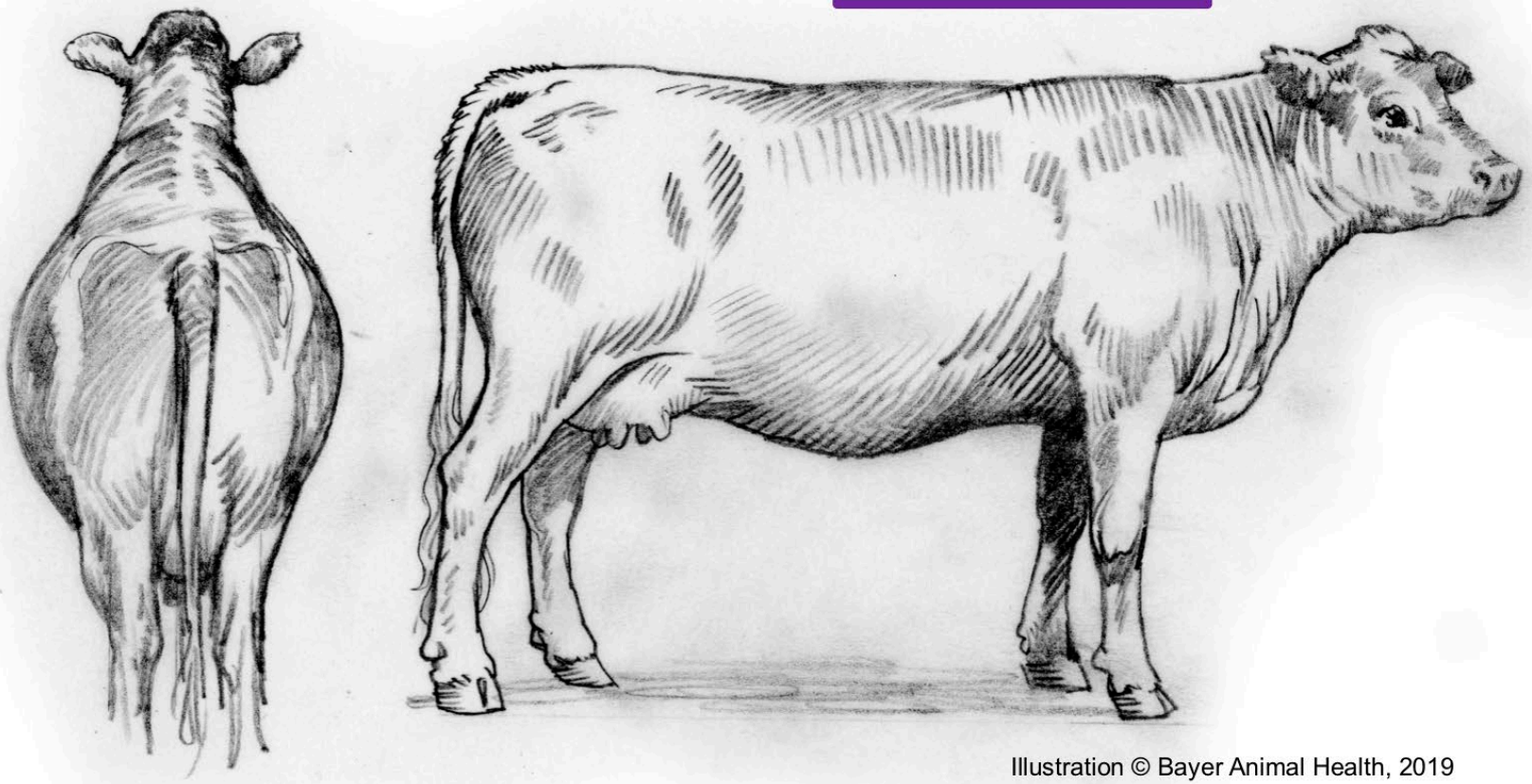
What BCS Looks Like

BCS = 7

Live weight: 1,280 lbs.

26% body fat

Back is smooth and flat. Rump is rounded. Tail head blended into rump.



Adapted from: Herd, DB, Sprott LR. Body Condition, Nutrition and Reproduction of Beef Cows. AgriLife Extension Beef Cows.1996; B-1526.

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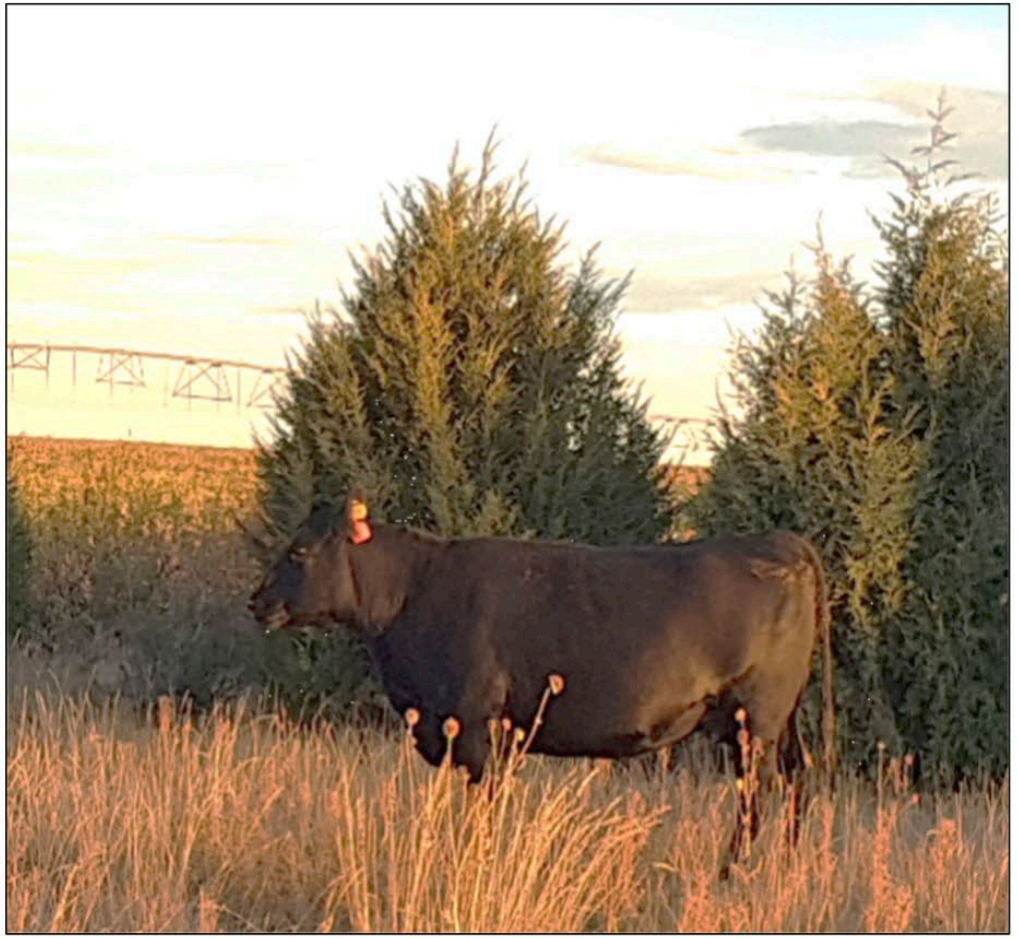
Factors that Influence BCS

Low BCS or changes in BCS can indicate several things

- Nutritional **quality of grazed forages** and supplemental feedstuffs[1]
- Health concerns, **parasite load**, lameness or chronic problems that do not show obvious symptoms[1]
- **Environmentally induced stressors** like heat/cold or fescue toxicosis[1]

"Keeping records and monitoring BCS over time will identify issues with individual animals or overall herd-management concerns"[1]



Example of a cow with a BCS of 6 – within the ideal range of 5-7

[1]Burns, M. (2014) Body Condition Scoring in Beef Cattle, is it important? University of Clemson, LF 01 - Rev/rep. May 2014 Livestock & Forages. Accessed on 08April2019. Available at: https://1pdf.net/download/body-condition-scoring-in-beef-cattle-is-it-important-clemson-_58717921e12e89961a0d0652

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BCS Summary

- A tool to indicate the nutritional status of the cow
- Evaluate BCS at key points in the year
  - Weaning, calving, breeding, “brown-off” (mature/brown forage)
- **Ideal 5.5 to 6** – cows
- **Ideal 6 to 6.5** - heifers
- No economical advantage to feed cows to BCS of ≥ 7

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30/30 - Energy Balance

Table 2a. First-calf Cow Return to Estrus and Calf Production For Adequate and Restricted 100-day Pre-Calving Feed Intake

First-Calf Cows	100% of Requirements	67% of Requirements
Born alive (%)	97	90
Weaning wt. (lbs.)	350	324
40-day estrus return (%)	41	28
Heifer calf puberty (days)	318	337

Corah et al., 1975.

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30/30 - Energy Balance

Table 2b. Second-calf Cow Return to Estrus and Calf Production For Adequate and Restricted 100-day Pre-Calving Feed Intake

Second-Calf Cows	100% of Requirements	50% of Requirements
Born alive (%)	100	90
Alive at weaning (%)	100	71
40-day estrus return (%)	48	38
Weaning wt. (lbs.)	320	294
Calf Scours rate (%)	33	50
Mortality (%)	0	19

Corah et al., 1975.

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Colostrum

- “Adequate transfer of passively acquired antibody from colostrum is arguably the most important factor influencing preweaning calf immunity.”

Woolums AR. Vaccinating dry cows and calves: with what, when, and is it effective at protecting the calf. WCDS Advances in Dairy Technology. 2014;26:329-36.

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Colostrogenesis

- Limited information on details of timing of transfer of antibodies to colostrum, mostly focused on 3 to 5 weeks based on work of Brandon[1]
- Clear evidence of active transport mechanism, mainly IgG_1[2]
- IgG_1 in colostrum is concentrated to levels 5 to 10 times that of serum prior to calving[2]
- Estrogen, progesterone and prolactin all influence colostrogenesis[2]

- Brandon MR, Watson DL, Lascelles AK. The mechanism of transfer of immunoglobulin into mammary secretion of cows. Australian Journal of Experimental Biology and Medical Science. 1971 Dec;49(6):613-23.
- Barrington GM, McFadden TB, et al Regulation of colostrogenesis in Cattle, Livestock Production Science, 2001 70 95-104.

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Colostrogenesis

- IgG_1 begins to be transported into colostrum up to 8 weeks prior to calving[1]
- Peak IgG transport appears to occur between 28 to 14 days pre-partum[2]
- This process continues up to calving or shortly thereafter when it appears to be downregulated due to the onset of lactogenesis
- Peak colostral IgG and lowest serum IgG levels occur between 4 days prepartum and day of calving. Total reduction in serum IgG of 59.2%[1]
- Serum IgG levels return to normal prepartum levels by 28 days post calving[1]

- Herr M, Bostedt H, Failing K. IgG and IgM levels in dairy cows during the periparturient period. Theriogenology. 2011;75(2):377-85.
- Guy MA, McFadden TB, et al Regulation of colostrum formation in beef and dairy cows J Dairy Sci 1994; 77(10): 3002-7.

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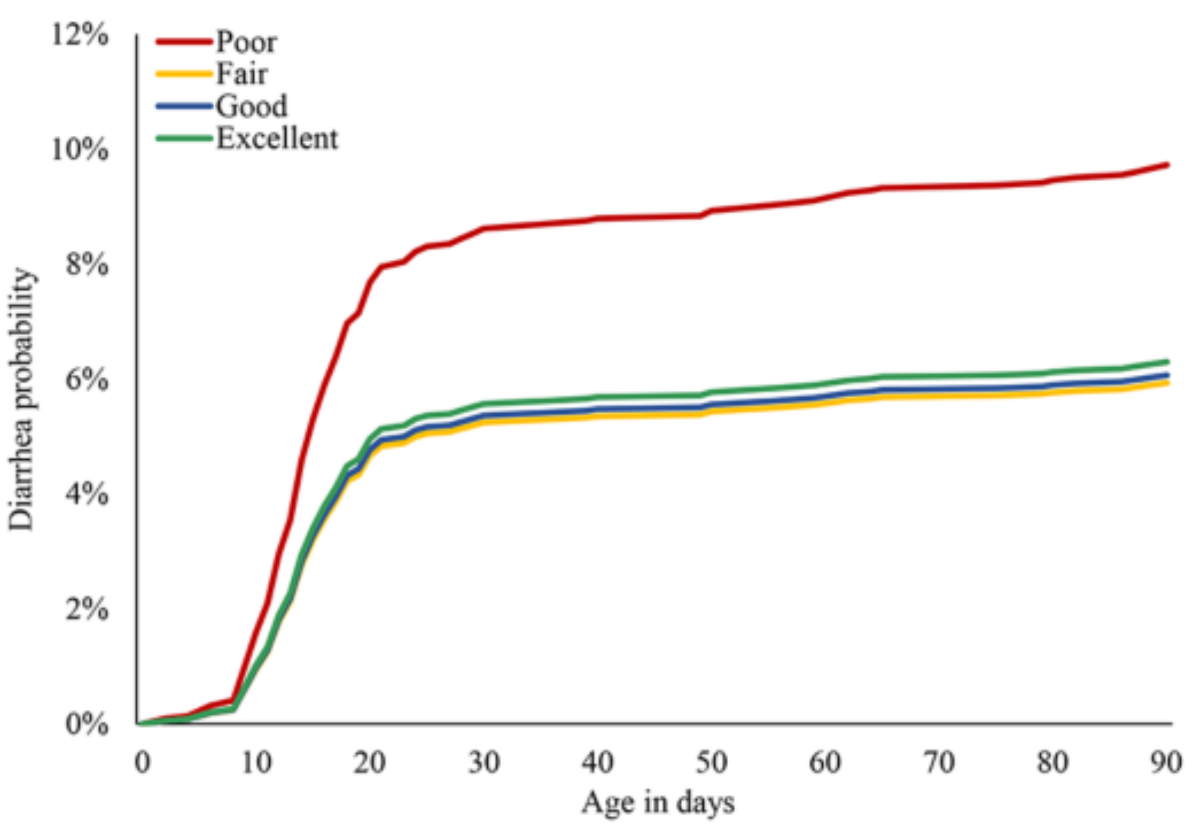
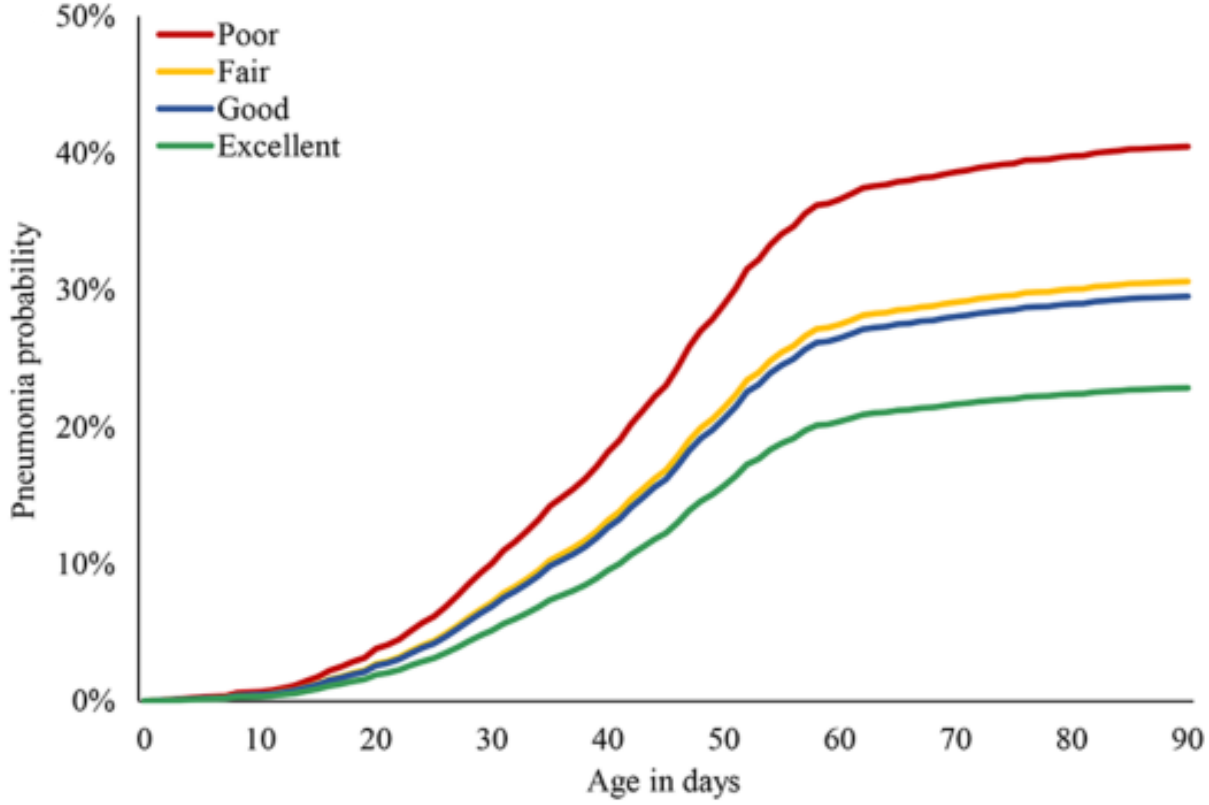
Health Outcomes





- Sutter F, Venjakob PL, Heuwieser W, Borchardt S. Association between transfer of passive immunity, health, and performance of female dairy calves from birth to weaning. Journal of Dairy Science. 2023 Oct 1;106(10):7043-55.

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US Meat Animal Research Center Clay Center, Nebraska

- Calves with “inadequate” passive immunity
  - **5.4** times greater risk of **death** before weaning
  - **6.4** times greater risk for **sickness** during the first 28 days of life
  - Average 35-pound loss in weaning weight
  - **3.2** times greater risk of **sickness** before weaning
  - **3** times greater risk for health challenges in the **feedlot**, when compared to “adequate” calves

Drovers news source - Updated January 28, 2021 02:44 PM

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Calving

- Cow & Calf Health
- BCS & Nutrition
- Involution
- Udder
- Bulls – BSE +/- Trich

At birth

- Mothered up
- Colostrum
- Naval
- AD&E – SE ?
- Ear Tag
- Vaccines +/-
- Band / Castrate?
- Implant?

Calf Health Considerations

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Branding:

Calves Processed

- Brand
- Castrate
- Vaccinate

Cows & Bulls

- Vaccinate
- Turn out

Branding: Health Considerations

Calves

- 2-3 months of age
  - 3/5 way viral respiratory
  - 7/8-way Clostridial (Blackleg)
  - Mannheimia haemolytica+/-
  - Castrate / Dehorn
  - Implant $ vs NHTC $
    - Do not implant potential replacement heifers
- *Flies / Lice / Parasites*
  - *Seasonal*

Photo courtesy Joe Melton, DVM

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Branding: Health Considerations

Breeding Herd

- Pre Breeding
  - Bull Power
  - Pre Breeding Vaccines
    - IBR, BVD (PI3, BRSV) Lepto (Vib)
  - Sync & AI?
  - Flies / Lice / Parasites
    - Seasonal

Photo courtesy Joe Melton, DVM

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Weaning & **Pre**-weaning $$$

Is Worth Considering

Weaning Technique

Cow & Calf Health Considerations

Pre-weaning Health Options

Calves

- 4-5 months of age
  - 3/5way viral respiratory Re-Vac
  - 7/8-way Blackleg Booster
  - Mannheimia +/-
  - **Deworm**
  - Rumensin in mineral / creep – Cocci

– *Flies / Lice / Parasites*

  - *Seasonal*

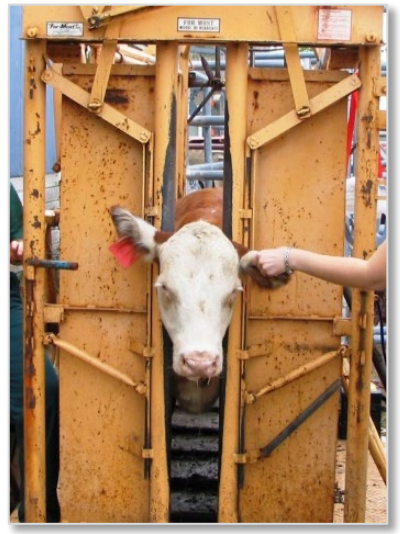

Photo courtesy Joe Melton, DVM

Weaning: Health Considerations

Calves

- Weaning
  - 3/5 way viral respiratory +/-
  - Deworm
  - Re – Implant +/- (Not Replacements)

  - Fly, Lice, Parasites
    - Seasonal

Photo: https://dam.farmjournal.com/m/62246c7226e8d59c/webimage-BT-Feedlot-Cattle-Bunk-Feedline.jpg

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Weaning: Health Considerations

Breeding Herd

- Preg Check & BCS
  - Vaccines
  - Open Cows
  - Culls – Eyes, Udders, Feet
- Flies / Lice / Parasites
  - Seasonal

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Flies / Lice / Parasites - Seasonal

- Fly Control
  - Rubs, Tags, PO, IGR, Sprays
- Lice Control
  - Pour On

Photo courtesy Joe Melton, DVM

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Good

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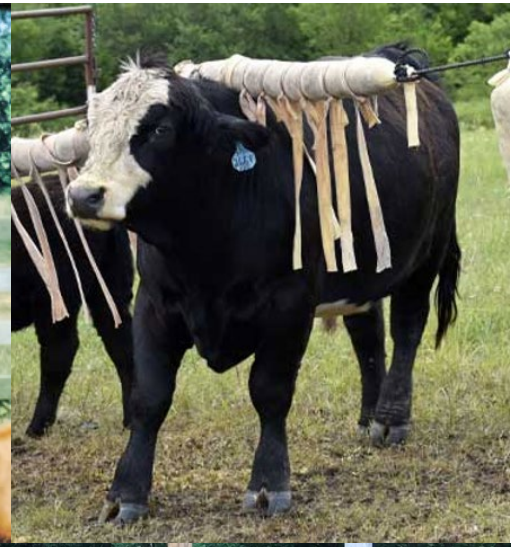
Better



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Best

TARGETED PARASITE MITIGATION & MANAGEMENT

Use of Dry Lots / Sourcing

Drag Pastures

- When hot and dry.

Rest Pastures

- Rotate with hay production.

Cross-Species Grazing

Genetic Selection – 80/20 Rule

Targeted **S**elective **T**reatment-**TST**

- FAMACHA© – small ruminant
- **"4 Score and 3 years"** – Cow / Calf
  - BCS ≤ 4, YOA ≤ 3

Strategic Deworming

- Timed by prepatent period.

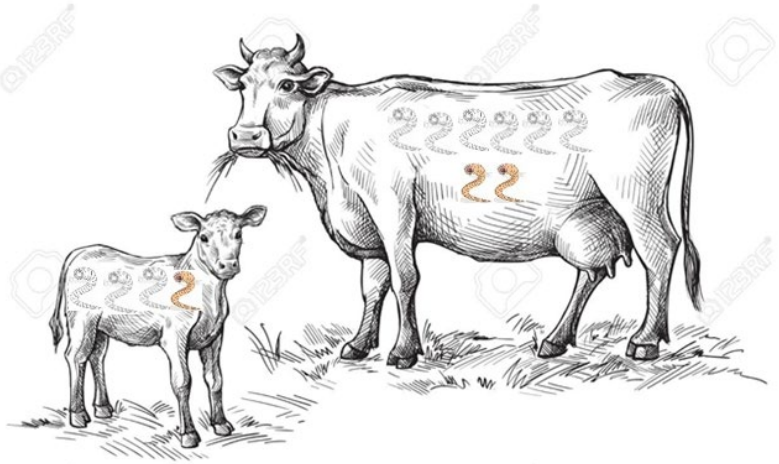
Concurrent Products

Herd Unit Testing Pre-Treatment

- **Species Specific Quantitative Analysis.**

Mitigation

- Refugia
- Biosecurity



Management

It's time to think outside... **The Bottle!**

Upper Photos: wormx.info / Can Stock, Vector Goods

Lower Photo: agupdate.com

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Preconditioning Potential

- **Producers should review:**
- Length of the calving season
- Uniformity of calf crop and weaning weights
- Genetic composition of cows and current herd sires
- Current feed resources and grazing management
- Herd health practices and records system
- Facilities
- Time and ability available for management

John B. Hall, Extension Animal Scientist, Beef, Virginia Tech

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Preconditioning Considerations

- **Questions should include:**
- What products am I producing now? Unweaned calves? Backgrounded calves? Finished cattle?
- What would I like to be producing?
- What amount of change in management practices am I willing to undertake?
- Do I have sufficient reserves or cash flow to defer income (or partial income) for 6 months to a year?
- How much risk verses potential reward am I willing to bear?

John B. Hall, Extension Animal Scientist, Beef, Virginia Tech

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Preconditioning Economics

- Over 9 years of the VQA program, premiums have averaged over $27 per animal for the 48,800+ animals marketed in the program.

2005 VQA Feeder Cattle vs. Graded Sales (L%M1)				
	# of Head	Avg. Wt.	+/- $/Cwt.	+/- Head
Steers	7825	675	$6.80	$45.90
Heifers	2970	609	$5.38	$32.76
Weighted Average	10795	657	$6.43	$42.25
B.R. McKinnon, VA Cattlemen's Association, 2006				

Questions?

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