

# Production Measures for Cow Herd Performance

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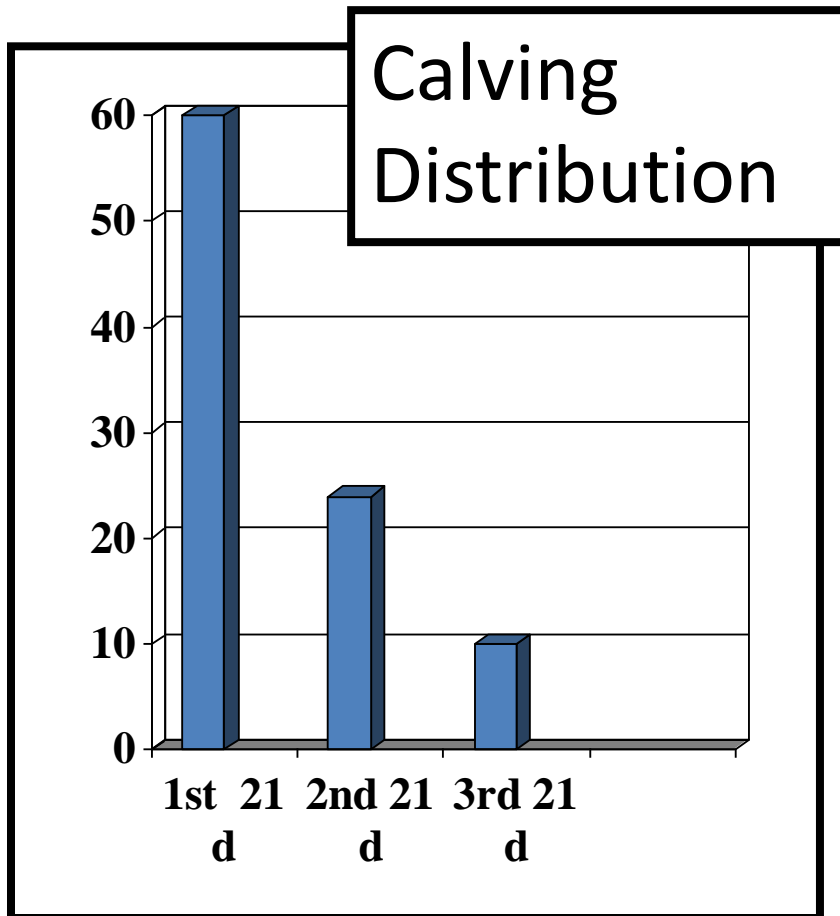
What measures of production are needed for (your) cow/calf enterprises in 2016 and beyond?

What are the goals for the (your) operation?

What measures are needed for making best decisions?

The case for continuous improvement.

# Begin With the End in Mind



- % calf crop – number calves weaned divided by number cows exposed
- Pounds marketed
- Price/pound
- Cost of production

# Reduced risk for disease, control or elimination of disease

Biosecurity – the outcome of all actions used to prevent disease agent entry into a unit of interest.

Biocontainment – the outcome of all actions resulting in control of a disease agent in a unit of interest

# Reduced Profit & Return On Assets With Increasing Perinatal Mortality

<b>Mortality Rate (%)</b>	<b>Reduced Profit (\$)</b>	<b>Reduced ROA (%)</b>
0	0	0.00
1	449.33	0.26
2	898.65	0.51
3	1347.98	0.77
4	1797.31	1.02
5	2246.63	1.28

Assumes 100 hd herd with avg investment \$1758/unit & profits of \$111.42/unit & annual calf death loss of 2.91% (SPA)  
SOURCE: TOOMBS, ET AL, VET CL N. AM, 1994, P 144

# Top 2 production factors with highest impact on cow/calf profitability

- % calf crop weaned
    - Number of calves weaned divided by number of cows exposed
  - Pounds weaned/cow exposed
    - Pounds of calf weaned divided by number of cows exposed
- AND
- COST OF PRODUCTION

# Rank of Reproductive Traits on Profitability

#1 Percent calf crop weaned

#2 Calving distribution



# Standardized Performance Analysis Cow-calf Data- 475 herds, Based on

Nearly 1 in 5  
females  
exposed failed  
to wean a calf

Production Parameter	Average	Top Quartile	Bottom Quartile	Standard Deviation
Pregnancy %	88.5	89.8		
Calving %	85.1			
Weaning %	81.8	84.8		
Avg Weaning Wt	521.3	538.7	500.6	38.1
Pounds Weaned Per Cow Exposed	427.9	456.3	401.5	54.8
Weaned Calf Payweight Price – Weighted Average	\$82.69	\$86.32	\$80.82	\$5.50

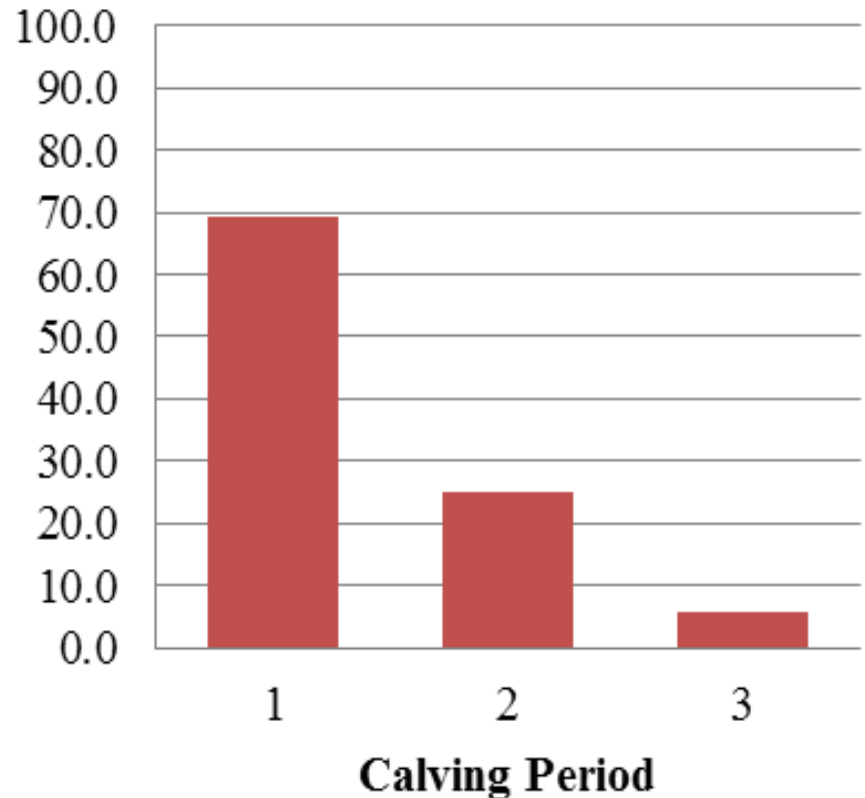


When do your females calve during  
your calving season?

What is happening to your weaning %  
and your pounds weaned/exposed  
female?

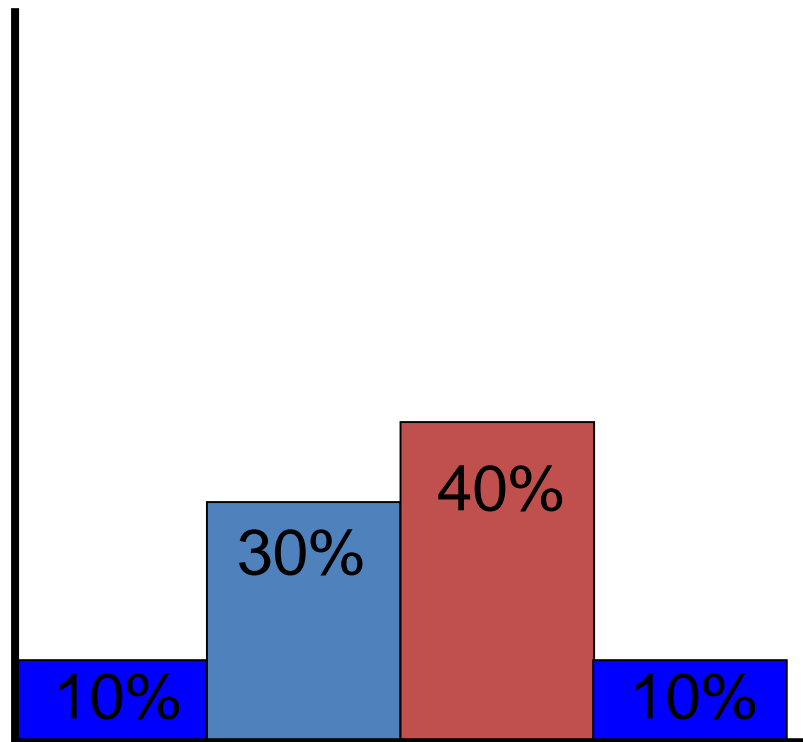
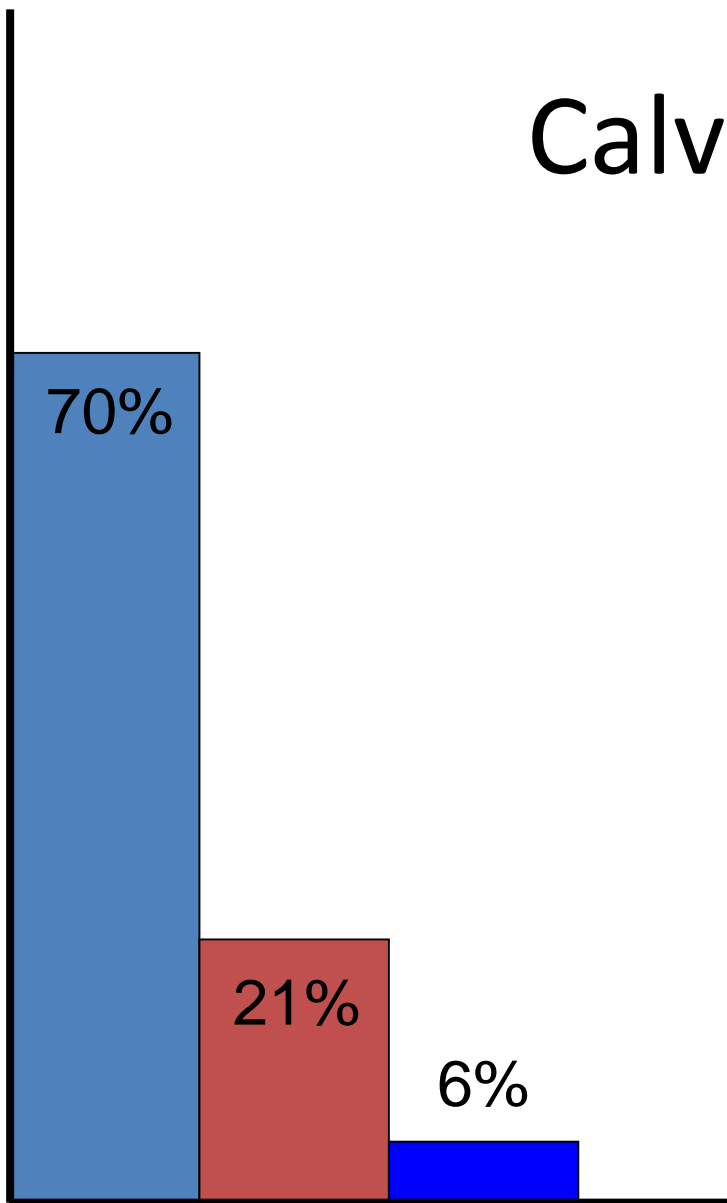
# Calving Distributions

- 21 day periods during the calving season
- Start date: 3<sup>rd</sup> term calf
- Minimum:
  - #born for each period
- Better:
  - **Cow ID**
  - **Cow age**
  - **Calf birth date**
  - **Calf ID**



*Adapted from BIF Guidelines, 2002*

# Calving Distribution



# Calving early in the calving season impacts production significantly!

- Increased pounds at weaning
- Positively impacts desirable carcass characteristics
- Produce more pounds of beef during reproductive life of females
- Increase cow longevity
- Low heritability but potential to increase likelihood of calving early

# Weaning Weight (lb) Differences by 21 Day Calving Period

	Calving Period 1	Calving Period 2	Calving Period 3
Lesmeister et. al, 1973	0	-46	-71
Funston et. al, 2012 (steer calves)	0	-28.7	-74.7
Cushman et. al, 2013	0	-45.64	-97.02
NDSU Dickinson Research Center, 2002	0	-40	-88

*\*First calf heifer progeny*

# Calculating herd performance parameters in cow-calf enterprises

- Inputs needed (7 sets of numbers)
  - Number exposed females (from previous year)
  - Pairs or pregnant females sold/transferred out preweaning
  - Pairs or pregnant females purchased/transferred in preweaning
  - Total head pregnant
  
  - Total number calves born (steers/bulls, heifers)
  - Total calves weaned (steers/bulls, heifers)
  - Total pounds (steer/bulls, heifers) weaned

# Calculating herd performance parameters in cow-calf enterprises

- Outputs generated (based on females exposed)
  - Pregnancy percentage
  - Calving percentage
  - Weaning percentage
  - Pounds weaned per exposed female

# Pregnancy Percentage

Number of females pregnant

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Number of females exposed

X 100 = Pregnancy %



# Calving Percentage

Number of calves born

$$\frac{\text{Number of calves born}}{\text{Number of females exposed} - \text{Number of females removed}^*} \times 100 = \text{Calving \%}$$

Number of females exposed

- Number of females removed\*

\* Number of females removed for nonreproductive reasons

# Weaned Calf Crop Percentage

$$\frac{\text{Number of calves weaned}^*}{\text{Number of females exposed} - \text{Number of females removed}^{**}} \times 100 = \text{Weaned Calf Crop \%}$$

\* Number calves sold + number calves retained

\*\* Number of females removed for nonreproductive reasons

# Pounds Weaned Per Female Exposed

No. steer calves x avg wt

+

No. heifer calves sold x avg wt

+

No. heifer calves retained x avg wt

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X 100 = LB Weaned/

Number of females exposed

Female

–

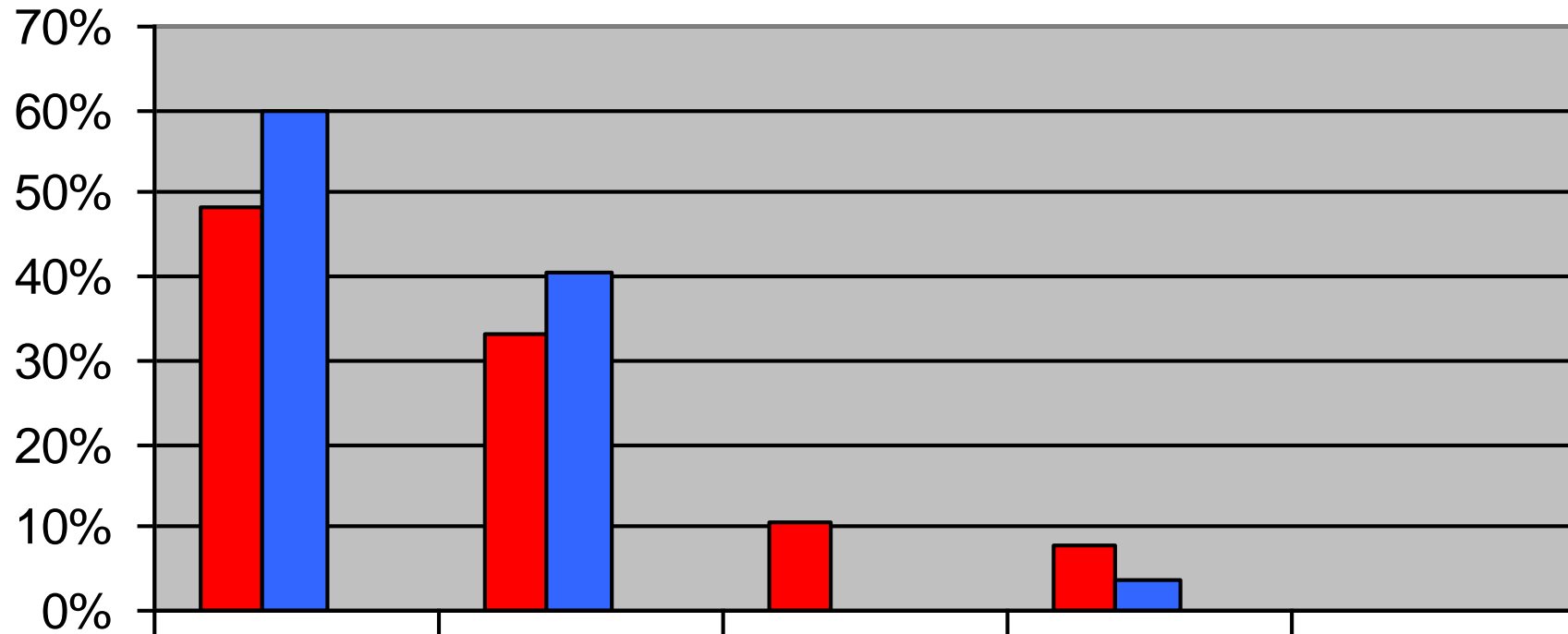
Exposed

Number of females removed\*

\* Number of females removed for nonreproductive reasons

# Example Beef Herd Production Measures

## 2007 Calving Distributions-Cows and Heifers



	first	second	third	fourth	fifth
2007Cows	48.2%	33.3%	10.7%	7.7%	0.0%
2007 Hfrs	59.6%	40.4%	0.0%	3.5%	0.0%
	0.0%	0.0%	0.0%	0.0%	0.0%

# Example Beef Herd Production Parameters

## 2007 Calf Crop

- Pregnancy percentage

–  $175 / (190 - 5) = 94.6\%$

- Calving percentage

–  $170 / (190 - 5) = 91.9\%$

- Weaned calf crop percentage

–  $161 / (190 - 5) = 87.0\%$

- Pounds weaned per cow exposed

–  $97,328 / (190 - 5) = 526$

2.6% Gestational & Calf  
Loss Preg Exam to Calving

3.9% Live Calf Loss  
Calving to Weaning

# Southwest Cow-calf SPA Data

<b>Production Parameter</b>	<b>Average</b>	<b>Top Quartile</b>	<b>Bottom Quartile</b>	<b>Difference (Q<sub>1</sub> vs Q<sub>4</sub>)</b>
Pregnancy %	88.5	89.8	86.7	3.1
Calving %	85.1	87.1	82.4	4.7
Weaning %	81.8	84.8	79.5	5.3
Avg Weaning Wt	521.3	538.7	500.6	38.1
Pounds Weaned Per Cow Exposed	427.9	456.3	401.5	54.8
Weaned Calf Payweight Price – Weighted Average	82.69	\$86.32	\$80.82	\$5.50

## Southwest Cow-Calf SPA Key Measures Grouped by Quartile

States: NM OK TX; Regions: all regions; Years: from 1991 to 2004

Number of Herds: 475; Herd Sizes: from 10 to 13,884; Total Cows: 334,820

*Quartiles (Based on Net Income)*

## Beef Reproductive Performance

<b>Region</b>	<b>Weaning Percentage</b>
North Central	87
Southern Plains	76
Northern Plains	93
Southeast	75
West	91

*Source: Short SD. Characteristics and Production Costs of U.S. Cow-Calf Operations. USDA, Statistical Bulletin # 974-3, November 2001.*

# Calculating herd performance parameters in cow-calf enterprises

- Calving Distribution
- Outputs generated (based on females exposed)
  - Pregnancy percentage
  - Calving percentage
  - Weaning percentage
  - Pounds weaned per exposed female
- **Do these contribute to achievement of your goals?**