

2020 KANSAS JUNIOR



PRODUCER DAY



K-STATE
Research and Extension

EDUCATIONAL MATERIALS



Youth Livestock Program • Kansas State University
214 Weber Hall • 1424 Claflin Road • Manhattan, KS 66506

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Contributors

Special thanks to these people for their contributions to the Junior Beef Producer Day program and this educational resource:

Animal ID, Inc.

Dr. Ann Brackenridge

Joe Carpenter & Barb Downey

Dr. Jaymelynn Farney

Dr. David Grieger

Lexie Hayes

Chris Mullinix

Dr. Travis O'Quinn

Dr. Emily Reppert

Dr. Scott Schaake

Dr. Bob Weaber

K-State Livestock Judging Team

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Beef Project Selection & Maximizing the Potential of a Show Steer

Chris Mullinix & Dr. Jaymelynn Farney
Department of Animal Sciences & Industry
Kansas State University

Selection and development criteria for a youth Market Steer project



*KSU Junior Beef Day
February 29, 2020*



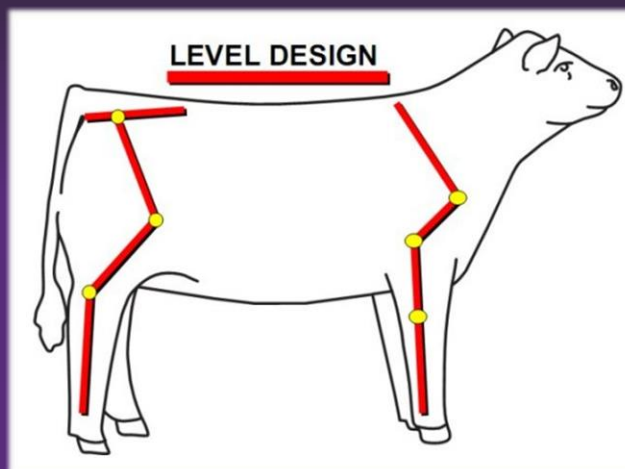
What is your goal?

- When/where is your terminal endpoint?
- Have you ever fed a market animal out?
- What is your level of nutrition knowledge?
- How well do you understand an animal's growth curve and according nutritional needs.
- What is your resource availability?
- What do you hope to take from the project?
- At what level do you plan/hope to compete?

Phenotypic traits to evaluate in the selection of your steer project

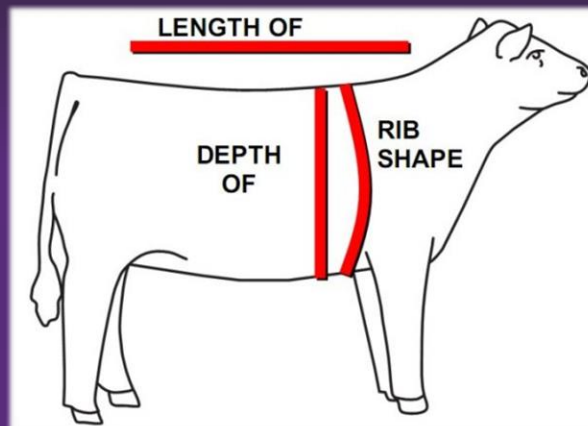
- Structural Correctness
- Body Volume
- Muscle
- Growth and Maturity Pattern
- Projection of ideal end weight
- Balance/Eye Appeal
- Breed

Correctness of structure





Body Volume



***Bone, Hair and a Neat Front End
Not a judges priority!***



Balance



Buyer Beware!

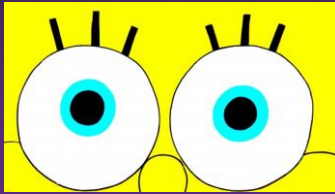
- *Selecting young cattle and predicting their outcome is very difficult*
- *Fundamentals first!*
- *Don't get wound up in the bells and whistles*
- *Online sales??*
 - *Convenient – Absolutely!*
 - *Don't forget the value in seeing an animal prior to purchase and the educational component associated with making that trip*

Any Questions?

Go Cats!!

EMAW!!

Tools essential for feeding show calf



Three stages of rations

- *Starter*
- *Grower*
- *Finisher*



<https://shorterranch.com/winners/>



http://www.ctnewsonline.com/news/article_e6b6a6ac-dfc3-11e9-ab2a-2395f6361ca4.html



Starter ration

- *14% or greater crude protein*
- *> 20% crude fiber*
- *Low energy*
 - *Not a lot of corn*
- *Often contain antibiotics*
- *Newly weaned calves*
- *Calves that have never consumed concentrate*
- *2 to 4 weeks to feed*



Starting cattle on feed

- *Few methods:*
- *Safest –*
 - *Free-choice grass hay*
 - *0.5% of body weight as concentrate*
 - *Increase concentrate 0.5% of body weight every 7-10 days until starter is maxed out at 1.5% of body weight*
- *Cleanest –*
 - *Total daily intake needs to be 3% of body weight*
 - *0.5% of body weight as concentrate*
 - *2.5% of body weight as grass hay*



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Starter ration - by weight

500 pound calf Week 1 – 0.5% of body weight as concentrate

- Free choice grass hay
- 2.75 lbs of concentrate $[(500 \text{ lb} \times 0.005) \div 0.90]$
- Gain ~1.25 lb/d

509 pound calf Week 2 – 1% of body weight as concentrate

- Weight 509 pounds $(1.25 \text{ lb/d ADG} \times 7 \text{ days} + 500 \text{ pound starting weight})$
- Free choice grass hay
- 5.5 lbs of concentrate $[(509 \text{ lb} \times 0.01) \div 0.90]$
- Gain ~1.75 lb/d

521 pound calf Week 3 – 1.5% of body weight as concentrate

- Weight 521 pounds $(1.75 \text{ lb/d ADG} \times 7 \text{ days} + 509 \text{ pound starting weight})$
- Free choice grass hay
- 7.8 lbs of concentrate $[(521 \text{ lb} \times 0.015) \div 0.90]$
- Gain ~2.00 lb/d

Starter ration - by weight

535 pound calf

Week 4 – 1.5% of body weight as concentrate

- Weight 535 pounds (2 lb/d ADG x 7 days + 521 pound previous weight)
- Free choice grass hay
- 8.9 lbs of concentrate $[(535 \text{ lb} \times 0.015) \div 0.90]$
- Gain ~2.00 lb/d

549 pound calf

Week 5 – transition to grower ration

Starter ration - by weight

500 pound calf

Week 1 – 0.5% of body weight as concentrate

- Total intake of 13.8 pounds $[(500 \text{ lb} \times 0.025) \div 0.90]$
- 2.75 lbs of concentrate $[(500 \text{ lb} \times 0.005) \div 0.90]$
- 11 lbs of hay
- Gain ~1.25 lb/d

509 pound calf

Week 2 – 1% of body weight as concentrate

- Weight 509 pounds (1.25 lb/d ADG x 7 days + 500 pound starting weight)
- Total daily intake of 15.25 lbs $[(509 \text{ lb} \times 0.027) \div 0.90]$
- 5.5 lbs of concentrate $[(509 \text{ lb} \times 0.01) \div 0.90]$
- 9.75 lbs of hay
- Gain ~1.75 lb/d

521 pound calf

Week 3 – 1.5% of body weight as concentrate

- Weight 521 pounds (1.75 lb/d ADG x 7 days + 509 pound starting weight)
- Total daily intake of 15.6 lbs $[(521 \text{ lb} \times 0.027) \div 0.90]$
- 7.8 lbs of concentrate $[(521 \text{ lb} \times 0.015) \div 0.90]$
- 7.8 lbs of hay
- Gain ~2.00 lb/d

Starter ration - by weight

535 pound calf Week 5 – 1.5% of body weight as concentrate

- Weight 535 pounds ($2 \text{ lb/d ADG} \times 7 \text{ days} + 521 \text{ pound previous weight}$)
- Total daily intake of 16.1 lbs $[(535 \text{ lb} \times 0.027) \div 0.90]$
- 8.9 lbs of concentrate $[(521 \text{ lb} \times 0.015) \div 0.90]$
- 7.2 lbs of hay
- Gain $\sim 2.00 \text{ lb/d}$

549 pound calf Week 5 – transition to grower

- Weight 549 pounds ($2.0 \text{ lb/d ADG} \times 7 \text{ days} + 535 \text{ pound previous weight}$)

Starting cattle on feed

- *Few methods:*
- *Grower starting –*
 - *Free-choice grass hay*
 - *0.5% of body weight as concentrate*
 - *Increase concentrate 0.5% of body weight every 7-10 days until starter is maxed out at 1.5% of body weight*

ONLY RECOMMEND if knowing that the calf has been eating concentrates

Starting on feed with grower ration – by lb of feed

500 pound calf

Week 1

- Free choice grass hay
- 2.75 lbs of concentrate

509 pound calf

Week 2

- Free choice grass hay
- 4.25 lbs of concentrate

521 pound calf

Week 3

- Free choice grass hay
- 5.75 lbs of concentrate

535 pound calf

Week 4

- Free choice grass hay
- 7.25 lbs of concentrate

549 pound calf

Week 5

- Free choice grass hay
- 8.75 lbs of concentrate

After week 5, bump concentrate up 0.5 pounds every 7 to 10 days until 800 to 1,000 pounds.

- 800 pounds start finisher for large framed, later maturing cattle to make sure you get enough finish by show day
- 1,000 pound to start finisher for small framed, early maturing cattle



Grower ration

- *500 to 1,000 pound calves*
- *>12% crude protein*
- *Moderate energy*
- *Moderate fiber (15-20% crude fiber)*
- *2 to 3 pounds ADG*
- *Ideal ration for heifers if fed at 1 to 1.5% of body weight*



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Transitioning to grower ration

- *First week replace 25% of starter ration with grower ration every 3 to 5 days (or could stay on your week by week)*
 - *Within a month are completely on grower ration*
 - *Calves are gaining weight – should be at least 2 lbs/day so every week need to increase concentrate feed by 0.5 pounds per day*
- *If started with growing ration on week 6 start increasing the amount of grower 0.5 pounds per day*
- *Calves are gaining weight – should be at least 2 lbs/day so every week need to increase concentrate feed by 0.5 pounds per day*

Starter to grower transition - by weight

549 pound calf

Week 5 – 1.5% of body weight as concentrate

- Weight 535 pounds (2 lb/d ADG x 7 days + 535 pound previous weight)
- Free choice grass hay
- 8.9 lbs of concentrate $[(549 \text{ lb} \times 0.015) \div 0.90]$
- 2.25 lbs as grower (0.25 x 8.9) and 6.65 lbs as starter (0.75 x 8.9)
- Gain ~2.00 lb/d

563 pound calf

Week 6 – 1.5% of body weight as concentrate

- Weight 563 pounds (2 lb/d ADG x 7 days + 549 pound previous weight)
- Free choice grass hay
- 9.4 lbs of concentrate $[(563 \text{ lb} \times 0.015) \div 0.90]$
- 4.7 lbs as grower (0.50 x 9.4) and 4.7 lbs as starter (0.5 x 9.4)
- Gain ~2.25 lb/d

578 pound calf

Week 7 – 1.5% of body weight as concentrate

- Weight 577 pounds (2.25 lb/d ADG x 7 days + 563 pound previous weight)
- Free choice grass hay
- 9.6 lbs of concentrate $[(578 \text{ lb} \times 0.015) \div 0.90]$
- 7.2 lbs as grower (0.75 x 9.6) and 2.4 lbs as starter (0.25 x 9.6)
- Gain ~2.50 lb/d

596 pound calf

Week 8 – 1.5% of body weight as concentrate

- Weight 596 pounds (2.5 lb/d ADG x 7 days + 578 pound previous weight)
- Free choice grass hay
- 9.9 lbs of concentrate $[(596 \text{ lb} \times 0.015) \div 0.90]$ all as grower
- Gain ~2.50 lb/d

Beginning on week 9 calves will continue to gain weight, and we are keeping grower concentrate at 1.5% of body weight – that equals about 0.5 lbs additional concentrate each week for an ADG of 2.5 lbs/d



Finishing ration

- *< 12% crude protein*
- *Crude fiber 12-15%*
- *High energy*
 - *> 50% corn*
- *Feed 70 to 120 days before final endpoint*
- *When to start feeding finishing ration*
 - *Small frame, early maturing – 1,000 pounds*
 - *Large frame, late maturing – 800 pounds*



Finishing ration transition

- *Same transition methods as with starter to grower*
- *25% substitution every week*
- *If cattle getting too fat, add more grower*
- *If not getting fat enough, add liquid fat – not corn*



Jaymelynn Farney

620-820-6125

jfkj@ksu.edu



Selecting Your Next Show Heifer to Be a Great Cow

Dr. Bob Weaver, Cow/Calf Extension Specialist and Associate Professor
Department of Animal Sciences and Industry
Kansas State University

For many junior livestock participants, the purchase of a breeding heifer is a significant investment in the future. Breeding projects are meant to serve a number of goals. First, they enable the junior livestock exhibitor to learn more about the commercial and seedstock sectors of the beef industry. Second, these projects foster the development of beef cattle husbandry skills including feeding, nutrition, genetics, reproductive physiology and visual appraisal. Third, the heifers are typically selected for conformational attributes viewed to be desirable in the show ring. Fourth, the heifers are retained as breeding females to build a cow herd that will help finance many youth's college education. It's easy for the visual appraisal component to dominate the selection decision when evaluating a group of heifer calves for purchase. However, if your goal includes keeping that heifer as a breeding female to produce seedstock or other heifer or steers suitable for future projects, some care should be taken to evaluate the genetic merit for a number of economically important traits. The tools you should use to judge the genetic merit of a selection candidate are Expected Progeny Differences (EPD).

What are EPDs?

EPDs are estimates or predictions of the difference in performance that are expected to be observed between the average performance of sire progeny groups for a given trait when given an equal opportunity to perform. EPDs are relative measures of genetic merit and allow the effective comparison of animals across herds. EPDs are the most effective selection tool available. Research suggest that EPD are 7 to 9 times more effective as predictors of genetic merit than an animal's actual or adjust performance record or within contemporary group ratio.

While EPDs are not the only selection information you should consider, EPDs are the most effective tools available to describe the genetic differences between animals within and across herds. EPDs are much more effective genetic predictors than actual or adjusted performance records. If an EPD is available for a trait it should be used instead of an animal's own performance record for that trait. The EPD removes age and environmental effects that can bias a decision based on actual or adjusted performance records. Use Calving Ease (CE or CED) EPD, rather than birth weight (BW) EPD, if it's available to select bulls that minimize calving difficulty. CE EPD calculations include BW data and other sources of information that affect dystocia.

Not all EPDs are the same, so make sure you know the appropriate information for the breed of cattle you are purchasing. For a useful reference on EPDs and other genetic topics see the Beef Sire Selection Manual (<http://www.nbcec.org/producers/sire.html>) Obtain the breed average EPDs and a percentile rank table available from the most current genetic evaluation for the breed of interest. Percentile rank tables can be found on most breed association websites but the current Angus (non-parent females) and Simmental percentiles are included at the end of this document. These tools will enable you to compare the relative genetic merit of individual animals to other animals in the breed.

Finally, not all EPDs should be used for selection of replacement or breeding females. Some traits like marbling score, carcass weight, or terminally oriented selection indexes focus on progeny performance for marketing endpoints. These traits are not economically relevant to a

replacement selection decision. Traits that affect a cow's ability to conceive a calf, give birth to the calf with no dystocia, rear that calf to weaning and do it year after year are the traits of importance. A list of suggested traits to consider when purchasing a heifer is listed below. Setting criteria for lots of traits rather than just a few important ones dilutes your selection intensity and often clouds your decision making ability.

Trait Definitions for EPD to Consider in Heifer Selection

(Adapted from Cowley, 1998; <http://simmental.org/site/index.php/genetic-evaluation/epds>)

Calving Ease Direct - Predict the average difference in ease with which a sire's calves will be born when bred to first-calf heifers. Expressed as percentage of unassisted births with a higher value indicating greater calving ease.

Calving Ease Maternal - Predict the average ease with which a sire's daughters will calve as first-calf heifers when compared to the daughters of another sire in the same evaluation. Expressed as percentage of unassisted births.

Weaning Weight - Weaning Weight EPDs are expressed in pounds and predict the average differences in weight that can be expected between the progeny of animals in the same genetic evaluation at 205 days of age. Weaning Weight EPDs do not account for differences in weaning weight that are due to milk.

Yearling Weight - Like Birth and Weaning Weight EPDs, Yearling Weight EPDs are expressed in pounds and predict the average differences that can be expected between the progeny of animals at one year of age.

Milk - Milk EPDs are expressed as pounds of calf weaned by a bull's daughters. They reflect the average differences in weaning weight that can be expected in grand-progeny due to the milking ability of a bull's daughters. Available feed resources will dictate the extent to which milking ability should be selected.

Total Maternal (Maternal Weaning Weight) - Like Milk EPD, Total Maternal EPDs are also measured in pounds of calf weaned by an animal's daughters. They account for average differences that can be expected from both weaning weight direct as well as from milk, and measure a sire's ability to transmit milk production and growth rate through his daughters. They are calculated by adding an animal's Milk EPD to one-half of its Weaning Weight EPD.

Heifer Pregnancy - Predict the additional percentage of heifer progeny that conceived a calf during a specified breeding season.

Docility - Predict the percentage of an animal's offspring that are expected to score favorably (1 or 2) on a five-point scoring system when compared to the offspring of another animal. Expressed as a percentage with higher values being favorable

Stayability - Expressed as the probability that an animal's daughters will remain in production to at least six years of age when compared to the daughters of another animal. A measure of sustained fertility that probably reflects traits such as fleshing ability and structural soundness. Expressed as deviations from a 50% probability, a higher value indicates increased stayability.

Angus Percentile Breakdown - February 2020

Non-Parent Cows

Top Pct	Production					Maternal					Carcass					\$Values				
	CED	BW	WW	YW	DOC	HP	CEM	Milk	MW	MH	\$EN	CW	Marb	RE	Fat	\$M	\$W	\$F	\$G	\$B
1%	16	-2.9	82	143	33	17.8	16	38	118	1.2	19	73	1.42	1.2	-0.056	84	88	124	88	192
2%	15	-2.3	78	137	31	17.1	15	36	110	1.1	16	69	1.31	1.13	-0.048	81	84	119	83	184
3%	14	-2	76	133	30	16.6	15	35	105	1	14	67	1.24	1.08	-0.043	79	81	115	79	179
4%	14	-1.8	74	130	30	16.2	14	34	102	1	13	65	1.19	1.04	-0.04	78	79	113	77	176
5%	14	-1.6	73	128	29	15.9	14	33	99	1	11	63	1.15	1.01	-0.036	76	77	111	75	173
10%	12	-0.9	68	120	26	14.8	13	31	88	0.8	6	58	1	0.9	-0.026	73	71	104	67	163
15%	11	-0.4	65	115	25	14.1	12	30	81	0.7	3	55	0.91	0.83	-0.019	70	68	100	63	156
20%	10	-0.1	63	111	23	13.5	11	29	75	0.6	0	52	0.84	0.77	-0.013	67	65	97	59	151
25%	9	0.2	61	108	22	13	11	28	71	0.6	-2	50	0.78	0.73	-0.009	65	62	94	56	147
30%	9	0.5	59	105	21	12.6	10	27	66	0.5	-4	48	0.73	0.69	-0.005	64	60	92	54	143
35%	8	0.7	58	102	20	12.1	10	27	62	0.5	-6	46	0.69	0.65	-0.001	62	58	90	51	139
40%	8	0.9	56	100	19	11.7	10	26	59	0.4	-7	44	0.64	0.62	0.003	60	56	88	49	136
45%	7	1.1	55	98	17	11.3	9	25	55	0.4	-9	42	0.6	0.58	0.006	59	55	86	47	133
50%	6	1.3	54	95	16	10.9	9	25	51	0.3	-10	40	0.56	0.55	0.01	57	53	84	45	130
55%	6	1.5	52	93	15	10.6	8	24	48	0.3	-12	38	0.52	0.52	0.013	55	51	82	43	127
60%	5	1.7	51	90	14	10.2	8	24	44	0.2	-13	37	0.48	0.49	0.017	54	49	80	42	124
65%	5	1.9	49	88	13	9.8	8	23	40	0.2	-15	35	0.44	0.46	0.02	52	48	78	40	121
70%	4	2.2	48	85	12	9.3	7	22	36	0.1	-17	33	0.4	0.42	0.024	50	46	75	38	117
75%	3	2.4	46	82	10	8.8	7	22	31	0.1	-18	31	0.35	0.39	0.028	48	44	73	36	114
80%	3	2.7	44	79	9	8.3	6	21	26	0	-20	28	0.3	0.34	0.032	46	41	70	34	110
85%	2	3	42	75	7	7.7	5	20	20	-0.1	-23	26	0.25	0.3	0.037	43	38	66	32	105
90%	0	3.4	39	69	4	6.9	4	19	13	-0.2	-26	22	0.18	0.24	0.044	40	35	62	29	99
95%	-1	4.1	33	59	1	5.8	3	17	2	-0.3	-31	17	0.08	0.15	0.053	35	28	54	25	89
Total Animals	127555	130252	130252	130252	47153	44673	127555	130252	43641	43641	128408	53623	53623	53623	53623	127932	131071	92359	92356	92351
Avg	6	1.3	53	95	16	10.9	9	25	51	0.3	-10	40	0.58	0.56	0.009	56	53	83	47	130

American Hereford Association
EPDs as of November 4, 2019
Pan American Hereford Cattle Evaluation

Average and Percentile Breakdown - 2017 & 2018 Calves																						
	Production				Fertility					Maternal					Carcass				\$ Indexes			
	CED	BW	WW	YW	DMI	SC	SCF	MM	M&G	CEM	MCW	UDR	TEAT	CW	FAT	REA	MARB	BMI	BIL	CHB		
Average	2.2	3.0	51	83	0.2	0.9	14.7	23	49	1.8	88	1.2	1.2	64	0.010	0.36	0.09	320	386	99		
Low	-18.1	-8.2	-14	-27	-1.3	-0.9	-10.6	-2	-4	-18.0	-31	0.2	0.1	-6	-0.111	-0.67	-0.85	-65	-16	4		
High	22.7	14.1	90	145	1.7	2.8	30.9	50	86	15.9	182	1.9	2.0	117	0.169	1.32	1.06	572	660	170		
Percentile Breakdown																						
Upper 1%	13.4	-2.7	70	114	-0.7	1.7	23.3	37	66	8.8	30	1.5	1.6	86	-0.041	0.76	0.47	455	540	129		
2%	12.2	-1.2	68	110	-0.5	1.6	22.5	35	64	8.0	45	1.5	1.5	83	-0.031	0.70	0.40	442	525	124		
3%	11.4	-0.7	67	108	-0.4	1.5	22.0	34	63	7.4	50	1.5	1.5	81	-0.031	0.67	0.36	433	515	122		
4%	10.7	-0.4	66	106	-0.4	1.5	21.6	33	62	7.0	53	1.4	1.5	80	-0.031	0.64	0.33	427	508	120		
5%	10.1	-0.1	65	104	-0.3	1.4	21.2	32	62	6.7	56	1.4	1.4	79	-0.031	0.63	0.31	422	501	118		
10%	8.1	0.7	62	99	-0.2	1.3	20.0	30	59	5.6	64	1.4	1.4	75	-0.021	0.56	0.24	403	479	114		
15%	6.9	1.2	60	96	-0.1	1.2	19.1	29	57	4.9	70	1.3	1.3	73	-0.011	0.52	0.21	389	462	111		
20%	5.9	1.6	58	94	-0.1	1.2	18.3	28	56	4.3	74	1.3	1.3	71	-0.011	0.49	0.18	378	449	108		
25%	5.1	1.9	57	92	0.0	1.1	17.7	27	55	3.8	77	1.3	1.3	70	-0.001	0.47	0.16	368	437	106		
30%	4.4	2.2	56	90	0.0	1.1	17.1	26	54	3.4	80	1.3	1.3	69	-0.001	0.44	0.14	358	427	105		
35%	3.8	2.4	55	88	0.1	1.0	16.5	26	53	2.9	82	1.2	1.2	68	-0.001	0.42	0.12	349	417	103		
40%	3.2	2.6	54	86	0.1	1.0	16.0	25	52	2.6	84	1.2	1.2	66	-0.001	0.40	0.11	340	407	102		
45%	2.6	2.8	53	85	0.1	0.9	15.4	24	51	2.2	87	1.2	1.2	65	0.009	0.38	0.09	332	398	101		
50%	2.1	3.0	52	83	0.2	0.9	14.9	24	50	1.8	89	1.2	1.2	64	0.009	0.36	0.08	323	389	99		
55%	1.5	3.2	51	82	0.2	0.8	14.3	23	49	1.5	91	1.2	1.2	63	0.009	0.34	0.07	314	379	98		
60%	1.0	3.4	50	80	0.2	0.8	13.7	22	48	1.1	93	1.2	1.1	62	0.019	0.32	0.06	305	369	97		
65%	0.4	3.7	49	78	0.3	0.8	13.1	21	47	0.7	95	1.1	1.1	61	0.019	0.30	0.04	296	359	95		
70%	-0.2	3.9	48	77	0.3	0.7	12.5	21	46	0.3	97	1.1	1.1	60	0.019	0.27	0.03	286	348	94		
75%	-0.9	4.1	46	75	0.3	0.7	11.8	20	44	-0.2	100	1.1	1.1	58	0.029	0.25	0.02	275	336	92		
80%	-1.6	4.4	45	72	0.4	0.6	11.1	19	43	-0.7	102	1.1	1.1	57	0.029	0.22	-0.01	263	323	91		
85%	-2.4	4.7	43	70	0.5	0.6	10.3	18	41	-1.3	106	1.1	1.0	55	0.039	0.19	-0.02	249	307	89		
90%	-3.5	5.2	41	66	0.5	0.5	9.3	16	38	-2.0	110	1.0	1.0	52	0.039	0.15	-0.05	235	290	86		
95%	-5.2	5.9	37	60	0.6	0.4	7.7	13	34	-3.2	116	1.0	1.0	48	0.049	0.08	-0.08	211	266	82		
100%	-18.1	14.1	-14	-27	1.7	-0.9	-10.6	-2	-4	-18.0	182	0.2	0.1	-6	0.169	-0.67	-0.85	-65	-16	5		

003 376 calves born in 2017 and 2018

303,376 calves born in 2017 and 2018

Purebred Simmental Percentiles Table

%	API	TI	CE	BW	WW	PWG	YW	MCE	MLK	MWW	STY	DOC	CWT	YG	MRB	BF	REA	SF
1	158.57	85.63	17.10	-2.50	89.30	0.31	136.10	10.40	32.00	69.90	22.30	17.00	48.60	-0.60	0.41	-0.15	1.22	-0.51
2	153.89	83.39	16.10	-1.80	86.20	0.29	131.00	9.70	30.60	68.10	21.70	16.10	45.60	-0.59	0.35	-0.14	1.17	-0.49
3	150.85	82.11	15.40	-1.50	84.40	0.29	128.20	9.30	29.70	67.10	21.40	15.60	44.10	-0.58	0.32	-0.14	1.14	-0.47
4	148.60	81.14	15.00	-1.20	83.10	0.28	126.00	9.00	29.00	66.20	21.10	15.20	42.90	-0.57	0.30	-0.14	1.12	-0.46
5	146.66	80.33	14.70	-1.00	82.20	0.28	124.50	8.80	28.50	65.60	20.90	14.90	41.90	-0.56	0.28	-0.14	1.10	-0.45
10	141.26	77.70	13.60	-0.30	78.90	0.26	119.30	7.90	26.90	63.20	20.20	13.80	38.70	-0.54	0.21	-0.13	1.03	-0.42
15	137.72	76.03	12.80	0.20	76.80	0.25	115.70	7.40	25.80	61.70	19.70	13.10	36.70	-0.53	0.17	-0.13	0.99	-0.40
20	134.97	74.62	12.30	0.50	75.00	0.24	112.90	7.00	25.00	60.50	19.30	12.60	35.00	-0.51	0.13	-0.12	0.95	-0.39
25	132.73	73.46	11.80	0.80	73.60	0.23	110.40	6.60	24.30	59.50	19.00	12.20	33.70	-0.50	0.11	-0.12	0.93	-0.37
30	130.70	72.43	11.40	1.00	72.30	0.23	108.20	6.30	23.70	58.60	18.60	11.80	32.50	-0.49	0.08	-0.12	0.90	-0.36
35	128.83	71.48	11.00	1.20	71.10	0.22	106.20	6.00	23.10	57.80	18.30	11.40	31.40	-0.49	0.06	-0.12	0.88	-0.35
40	127.04	70.58	10.60	1.40	70.00	0.21	104.30	5.70	22.60	57.00	18.00	11.10	30.30	-0.48	0.05	-0.12	0.86	-0.34
45	125.39	69.77	10.30	1.60	68.90	0.21	102.50	5.50	22.10	56.30	17.70	10.80	29.30	-0.47	0.03	-0.11	0.84	-0.33
50	123.77	68.93	10.00	1.80	67.80	0.20	100.60	5.20	21.60	55.60	17.40	10.50	28.30	-0.46	0.01	-0.11	0.82	-0.33
55	122.22	68.14	9.60	2.00	66.80	0.20	98.70	4.90	21.10	54.80	17.10	10.20	27.30	-0.45	0.00	-0.11	0.80	-0.32
60	120.65	67.34	9.30	2.20	65.70	0.19	97.00	4.70	20.60	54.10	16.80	9.90	26.30	-0.44	-0.02	-0.11	0.79	-0.31
65	119.01	66.48	8.90	2.30	64.70	0.19	95.10	4.40	20.10	53.30	16.50	9.50	25.30	-0.43	-0.03	-0.10	0.76	-0.30
70	117.31	65.64	8.50	2.50	63.60	0.18	93.20	4.10	19.60	52.60	16.10	9.20	24.30	-0.42	-0.05	-0.10	0.75	-0.29
75	115.46	64.73	8.10	2.80	62.50	0.18	91.10	3.80	19.10	51.70	15.70	8.70	23.20	-0.41	-0.06	-0.10	0.72	-0.28
80	113.37	63.67	7.60	3.00	61.20	0.17	89.00	3.40	18.50	50.90	15.30	8.30	22.00	-0.40	-0.08	-0.09	0.70	-0.27
85	111.00	62.51	7.00	3.30	59.80	0.16	86.70	3.00	17.80	49.90	14.70	7.70	20.50	-0.39	-0.11	-0.09	0.67	-0.25
90	107.98	61.15	6.20	3.70	58.00	0.15	83.70	2.50	16.90	48.80	14.00	6.80	18.60	-0.37	-0.13	-0.08	0.63	-0.24
95	102.95	59.27	5.10	4.30	55.10	0.14	78.80	1.70	15.60	47.20	13.00	5.10	15.60	-0.34	-0.17	-0.08	0.58	-0.21
Avg	123.77	68.93	10.00	1.80	67.80	0.20	100.60	5.20	21.60	55.60	17.40	10.50	28.30	-0.46	0.01	-0.11	0.82	-0.33

Hybrid Simmental Percentiles Table

%	API	TI	CE	BW	WW	PWG	YW	MCE	MLK	MWW	STY	DOC	CWT	YG	MRB	BF	REA	SF
1	164.21	86.95	19.60	-4.40	87.40	0.32	136.60	11.70	32.20	70.50	21.80	18.00	53.40	-0.52	0.77	-0.13	1.09	-0.52
2	159.04	84.85	18.50	-3.70	84.30	0.31	131.80	11.00	30.80	68.20	21.00	17.00	50.20	-0.49	0.70	-0.12	1.04	-0.50
3	155.66	83.63	17.90	-3.30	82.60	0.30	128.80	10.60	30.00	66.90	20.60	16.40	48.20	-0.47	0.66	-0.11	1.00	-0.48
4	153.38	82.70	17.50	-2.90	81.30	0.29	126.80	10.20	29.40	65.80	20.30	16.00	46.70	-0.45	0.64	-0.10	0.97	-0.47
5	151.52	81.93	17.10	-2.70	80.20	0.29	125.00	10.00	28.90	65.00	20.00	15.70	45.50	-0.43	0.62	-0.10	0.94	-0.46
10	145.34	79.22	15.80	-1.80	76.80	0.27	119.10	9.10	27.30	62.50	19.10	14.60	41.70	-0.39	0.54	-0.09	0.86	-0.43
15	141.08	77.43	14.90	-1.30	74.50	0.26	115.20	8.60	26.20	60.90	18.50	14.00	39.20	-0.36	0.49	-0.08	0.82	-0.41
20	137.83	75.94	14.20	-0.90	72.60	0.25	112.20	8.10	25.40	59.60	18.00	13.40	37.30	-0.34	0.45	-0.07	0.78	-0.39
25	135.13	74.68	13.70	-0.50	71.10	0.24	109.60	7.80	24.60	58.60	17.50	13.00	35.60	-0.32	0.42	-0.07	0.75	-0.38
30	132.64	73.50	13.30	-0.30	69.70	0.24	107.30	7.40	24.00	57.70	17.10	12.60	34.20	-0.30	0.39	-0.06	0.72	-0.37
35	130.38	72.41	12.90	0.00	68.30	0.23	105.00	7.10	23.40	56.80	16.60	12.20	32.90	-0.28	0.36	-0.06	0.69	-0.35
40	128.11	71.35	12.50	0.20	67.00	0.22	102.90	6.90	22.80	56.00	16.20	11.90	31.80	-0.26	0.33	-0.05	0.67	-0.34
45	126.00	70.28	12.10	0.40	65.80	0.22	100.70	6.60	22.30	55.20	15.80	11.60	30.60	-0.25	0.30	-0.05	0.64	-0.33
50	123.83	69.24	11.70	0.60	64.50	0.21	98.50	6.30	21.70	54.40	15.40	11.20	29.50	-0.23	0.28	-0.04	0.62	-0.32
55	121.63	68.16	11.40	0.80	63.30	0.20	96.30	6.00	21.20	53.50	14.90	10.90	28.40	-0.21	0.26	-0.04	0.60	-0.31
60	119.37	67.10	11.00	1.00	62.10	0.20	94.00	5.80	20.70	52.60	14.50	10.60	27.20	-0.20	0.23	-0.04	0.57	-0.31
65	117.05	65.97	10.60	1.20	60.80	0.19	91.60	5.50	20.10	51.70	14.00	10.20	26.10	-0.18	0.21	-0.03	0.55	-0.30
70	114.63	64.80	10.20	1.40	59.40	0.18	89.10	5.20	19.60	50.60	13.40	9.80	24.80	-0.17	0.18	-0.03	0.52	-0.29
75	112.05	63.55	9.70	1.60	57.90	0.17	86.30	4.80	19.00	49.40	12.70	9.40	23.40	-0.15	0.15	-0.03	0.49	-0.28
80	109.14	62.16	9.20	1.90	56.20	0.16	83.20	4.40	18.30	48.10	12.00	8.90	21.90	-0.13	0.12	-0.02	0.46	-0.26
85	105.81	60.63	8.60	2.20	54.20	0.15	79.80	3.90	17.50	46.60	11.20	8.30	20.00	-0.11	0.09	-0.02	0.43	-0.25
90	101.64	58.82	7.80	2.60	51.70	0.14	75.40	3.40	16.60	44.70	10.20	7.40	17.50	-0.08	0.05	-0.01	0.38	-0.24
95	94.73	56.26	6.60	3.20	47.90	0.13	69.00	2.40	15.20	42.20	8.70	5.70	13.80	-0.03	-0.01	0.00	0.32	-0.21
Avg	123.83	69.24	11.70	0.60	64.50	0.21	98.50	6.30	21.70	54.40	15.40	11.20	29.50	-0.23	0.28	-0.04	0.62	-0.32

What is Nutrition and How to Feed Your Show Project

Dr. Jaymelynn Farney, Associate Professor, Beef Systems Specialist
Department of Animal Sciences & Industry
Kansas State University

Nutrition is one of the most important components of a successful 4H beef project. **Nutrition** is the process in which animals consume, digest, absorb, and use food for maintenance, growth, fetal development or milk production. **Nutrients** are the components of feeds that have specific functions within the animal to meet important metabolic processes. Nutrients include energy sources (sugar, starch, cellulose, fat), protein, minerals, vitamins, and water. Feeding costs are a large, but necessary expense in managing beef cattle, so understanding how cattle gain and the nutrients they require will make the most “bang for your buck” so to speak.

Nutrient requirements for varying levels of performance have been researched for years and the requirements are published by the National Research Council. These recommendations have been determined to be accurate for groups of cattle, but for your individual animal, if you are not happy with performance then consider making minute changes to protein, minerals, and vitamin levels. Cattle require nutrients in actual amount (weight) so some math will need to be used to determine if a commercial feed and/or your hay supplement are providing enough of the individual nutrients. When determining the actual amount of nutrients offered in feed an estimate of dry matter needs to be determined. The nutrients are located in the dry part of the feed and are called dry matter (DM). Dry matter is determined by taking a sample of the feed and drying it until there is zero moisture remaining. In general most dry feeds contain 7 to 13 percent moisture while molasses is 25% water. You can also gather exact dry matter by sending your feed to a testing laboratory or with the permission of your parents, placing a sample in an oven or microwave. Before trying to determine the dry content of your feed at home, research specific methods to determine dry matter content, and then follow directions.

Energy is very important for growth and fat deposition for all cattle. Energy is reported as total digestible nutrients (TDN) or net energy (NE). Net energy is further broken down into net energy for maintenance (NEm) or net energy for gain (NEg). As the names indicate NEm tells you how many calories (energy) needs to be supplied for maintenance (no change in weight or body fat), while NEg indicates the calories that will be used for putting on weight and body fat. Unfortunately, when reading the commercial labels for most feeds, they do not provide values for energy, but if you are concerned about this value, take a sample of your feed and submit to a laboratory for feed analysis. This will provide energy values for your feed and can help with determining how much to offer to your cattle to meet your goals. Energy from feed ingredients is often split into two categories: concentrate and roughage. Concentrate is typically very high energy grains with starch while roughage is typically hays or “hulls”.

Protein is measured as crude protein (CP). It is expressed as a percentage and for all commercial rations will be listed in the nutrient profile. Protein is required to aid in rumen microbial digestion, maintenance of feed intake and lean growth. Protein sources vary in location of digestion within the animal and understanding the basics about protein digestion will help provide the requirements for successful growth and “look” for your show animal. Protein sources offered to cattle will first have to feed the rumen microbes. Feed protein that is digested by the rumen microbes is called rumen degradable protein (RDP). Once the rumen microbes digest the protein they generate microbial crude protein (MCP) in the rumen that then gets passed through the rest of the stomachs to the small intestine where it is finally used by the animal as a protein source. Microbial crude protein, if the rumen environment is balanced, is an ideal protein source for the ruminant. This is the reason why in ruminant nutrition we say “Feed the rumen microbes first”. Another form of protein is by-pass protein or rumen undegradable protein (RUP). This protein passes through the rumen without digestion by the microbes and then can be used by the animal in the small intestine. Small amounts of by-pass protein have been shown to help with cattle performance. However, it is MOST important that nearly 80% of the protein offered to the animal is rumen degradable. In general, protein from grains, fresh grasses, and hays are primarily rumen degradable, while by-product feeds are about 50% by-pass protein. Non-protein nitrogen (NPN) is essentially 100% rumen degradable if adequate energy is supplied in the diet.

From a mineral perspective, there are two broad classes of minerals; macrominerals which are fed at higher levels and micromineral which are fed at lower levels. Calcium, phosphorus, salt, and

magnesium are very important macrominerals that need to be included and balanced in the diet. Important microminerals include selenium, zinc, copper, and manganese. These are important for the “healthy look” of the cattle, for reproduction in heifers, and immune health. Amounts of these minerals will be listed on the feed tag.

Vitamins are also important for health, growth, and “bloom”. Vitamins A and E are two that must be fed to cattle. Vitamin D is synthesized by sunlight exposure and does not need to be fed. However, if your cattle do not see sunlight daily, feeding a minimum of 125 IU/pound of feed is required. Vitamin B and C are synthesized in the rumen and do not need to be fed to cattle. The exception, is cattle that have rumen issues like bloat or acidosis, some Vitamin B will be beneficial until rumen is healthy again.

Understanding Feed Label

Since it is important to make sure nutrient requirements are met, reading and understanding a feed label becomes a must for feeding success. Some basics to help with understanding your feed label include understanding that the values reported on the label are described as “as-is”. Within the feed label the amounts of important nutrients will be listed. For example, crude protein is listed as a percentage, whereas zinc is listed as parts per million (ppm). This becomes important so that you can accurately calculate the appropriate protein and minerals to offer your cattle. Antibiotics and ionophores are also listed on your feed label along with proper feeding directions associated with these ingredients. The final component of the feed label includes the list of ingredients. These are reported as the ingredient with the highest inclusion amount to the lowest. This in turn tells you predominantly what ingredient is being offered to you cattle. An example of a feed label is shown in figure 1.

Feed Ingredients

Grains – These feed ingredients are high in energy and will fatten cattle. The most common grain included in cattle diets is corn. Processing of corn increases the digestibility and the most common processed corn fed to ruminants is cracked, rolled, and steam flaked. Processing of the grain allows the rumen microbes greater access to the starch for microbial digestion. In a finishing ration, corn can be included between 42 to 58% of the total ration. Whole shelled corn can be fed to calves weighing up to 450 pounds because they can digest this grain efficiently but at heavier weights, processing will result in greater average daily gains.

Sorghum grain provides energy, but must be processed prior to feeding since the external seed coating is restrictive for the rumen microbes. Properly processed grain sorghum can replace corn, pound-for-pound in the ration.

Oats are another excellent grain source for steers and heifers. Oats offer energy and fiber therefore providing a dual purpose feed source. One issue with oats is the cost for the grain sometimes makes feeding of oats cost prohibitive. If you would like to include some oats in ration, but cost is prohibitive, try this lower cost mixture to replace the oats within a ration (on a pound for pound basis): 70-75% corn, 15-20% cottonseed hulls, and 10-15% cottonseed meal.

Barley and wheat are other grain options to feed to cattle. Barley can be used to replace up to 50% of the corn or sorghum in the ration. Barley is often included because of perception of improving handle on finished cattle. However, water consumption and thus moisture content of tissues plays a larger role in handle than feeding of barley. Wheat is a very high energy feed but is difficult to feed because of

Figure 1: Example of a feed label.
CAUTION...this is completely made up and by no means is an actual label or recommendation to feed to any cattle!

Net Weight 50 lbs (22.68 kg)	
Farney's Fine Heifer Feed	
PURPOSE	
Feed to growing replacement heifers for exhibition	
* ACTIVE DRUG INGREDIENT *	
Monensin.....	X gm/ton
* GUARANTEED ANALYSIS *	
Crude Protein (min.).....	16.00%
Crude Fat (min.).....	3.20%
Crude Fiber (max.).....	10.00%
Calcium (min.).....	0.75% (max.).....
Phosphorus (min.).....	0.85%
Salt (min.).....	0.50% (max.).....
Copper (min.).....	0.75% (max.).....
Selenium, ppm, (min.).....	22
Vitamin A, IU/lb (min.).....	150,000
Vitamin D, IU/lb (min.).....	12,000
Vitamin E, IU/lb (min.).....	60
* INGREDIENTS *	
Cottonseed hulls, corn by-products, corn, beet pulp pellets, molasses, fat products (feed grade), ferrous sulfate, manganous oxide, zinc sulfate, vitamin E supplement, vitamin A supplement, copper sulfate, sodium selenite, calcium iodate, and cobalt carbonate.	
* FEEDING DIRECTIONS *	
Feed at a rate of 1 to 2% of body weight along with free choice good quality hay. Provide ample feeder space and plenty of clean, fresh water at all times.	
* CAUTION *	
Read me because I am very important!! Especially since some feeds can't be fed in the same pasture as horses and sheep.	
Manufactured by Farney's Fake Extension Mill Anytown, US 00000	

the potential for acidosis and bloat. Barley also is a high risk bloating grain when fed at high levels of the diet.

Protein Supplements - Common protein supplements fed to cattle include many grain by-product feeds. Typically a by-product feed has had the energy components removed for other industrial uses and what is left over is high protein, high fiber feeds that make great supplements for cattle. Examples of high protein feeds include soybean meal, cottonseed meal, linseed meal, distillers grains, corn gluten meal, and brewers grains. Other high protein feeds that can be included in cattle diets are fish meal and non-protein nitrogen. Non-protein nitrogen sources such as urea and biuret are very cheap feed ingredients and work well with corn rations to meet cattle protein requirements and are used quite extensively in large commercial cattle feeding operations. However, “natural” or plant protein sources (aka not non-protein nitrogen) are a better feeding option for show cattle because they tend to provide extra bloom. Additionally, feeding urea to cattle weighing less than 600 pounds is not advisable because they cannot use this source of protein to meet requirements.

Younger cattle require higher levels of protein than older heavier cattle, as illustrated in table 1. Additionally, for greater lean muscle gains higher protein is required. All feed labels will provide a crude protein value of the feed. Crude protein is expressed as a percentage, so to determine if you are supplying enough protein to your animal you need to multiply the amount of feed by the percentage crude protein to determine how many pounds of crude protein you are providing your animal. If it matches the required amount in Table 1 then your ration is sufficient. Here is an example of how to calculate the amount of protein fed from a complete feed that is 12% crude protein with the steer eating 15 pounds and the dry matter of the feed is 96%.

$$15 \text{ lbs feed} \times (96/100) \times (12/100) = 1.73 \text{ lbs of protein on a DM basis}$$

Roughages - Cattle are designed to be able to convert fiber from grass to a product that people can use – meat...therefore all cattle diets need to include a source of roughage (fiber). Common sources of roughages include cottonseed hulls, hays, peanut and rice hulls. In younger cattle, when starting on concentrate diets, a higher roughage feed needs to be included so that chances of acidosis and bloat are reduced. When feeding your cattle, you do not want to cause digestive upsets because in most instances, a steer or heifer who bloats early in life will continually bloat and have reduced performance.

Acidosis is when too much starch is offered to the rumen microbes and it causes them to produce an acid that can cause damage to the rumen and potentially founder. Bloat is when too much gas is produced in the rumen and cannot escape. This is easy to see on the animal because the left side of their body will be expanded. Acidosis is hard to diagnose visually, unless the animal is really sick. Often times it can be manifested as diarrhea and the animal going off-feed. If bloat or acidosis occurs, then take the concentrate feed (corn or complete ration) out of the diet and place the animal on hay for a few days, then gradually start adding back the grain component. Properly stepping-up your steer or heifer to consuming concentrate will minimize the chance of acidosis and bloat. A typical method includes starting the steer or heifer with two to three pounds of grain with free choice hay for a couple of days, then increase the amount of grain (commercial feed) by 1.5-2.5 pounds every 7 to 10 days (for more details go to *Starting Cattle on Feed* section below). We still need at least 3-4 pounds of hay a day for rumen health, even while in a finishing diet.

For a starting/growing ration crude fiber needs 20-25% while a finishing ration needs to have about 12-16% fiber. Even in large commercial feeding operations there is at least 5% of the animals total diet that is a roughage/hay source. For younger animals a higher quality hay is recommended since such a large percentage of their diet is hay. Examples of high quality hay can include prairie, Bermuda, brome, and alfalfa. Alfalfa is the highest quality hay of that list, however, it is often not recommended to feed alfalfa to your show animals because it can very easily cause bloat. Dehydrated alfalfa pellets, on the other hand have a much lower chance of causing bloat issues and that is why they are often included in commercial mixes along with cottonseed hulls to meet the fiber requirements. If you are wanting to feed alfalfa to your calves then you need to blend it with some other grass hay and feed 2 pounds of alfalfa and 2-3 pounds of grass hay.

Additives – Special “ingredients” are not necessary to successfully feeding your show animal as long as requirements are met, however there are some feed additives that are useful to help with health, palatability, and conditioning of the feed and hair coat.

Medicated feeds are available if you have issues with coccidiosis or respiratory issues. Beginning January 2017, if feeding medicated feeds to your cattle, you must work with a veterinarian to get a valid veterinary feed directive (VFD) to be able to feed certain products.

All cattle feeds should include an ionophore. Ionophores not only help with feed efficiency, but help with minimizing coccidiosis and bloat. There are several quality ionophores on the market and all work well for feed efficiency. Sometimes ionophores can cause a reduction in daily feed consumption, but the cattle performance should not be impacted. If intake is restricted enough adding some feed conditioners to help with palatability can help. Examples of feed conditioners that increase palatability and reduce dust issues include molasses, fat, and oil. Some fats and oils can also increase the shine to the hair coat of your show animal, as long as there is less than 4% fat in the total ration. If there is more than 4% fat then intake is reduced.

In instances when digestive upset occurs, sometimes products like yeasts, direct-fed microbials, buffers, and enzymes can be used, but overall, if cattle are well-fed and well-managed the need for these potentially expensive additives are not needed, especially on a daily basis.

Feeding your calf

Gains and feed intake. Weight gain and fat thickness are the two primary points of concern with feeding your market steer. Knowing what your steer weighs at several times through the season will help you determine diets that need to be offered. Based on your calf's weight, days to show, and final weight, you can determine the appropriate average daily gain to meet your objectives. You should have two sets of average daily gain goals; one for the steers growing ration and one for the finishing ration. Typically, the finishing ration will be fed for 4-5 months prior to show (or start when cattle weigh 800 to 1,000 pounds). This finishing period, may be longer if you are trying to get cattle finished in the middle of summer. Cattle do not consume as much feed during the summer months and their conversion into muscle and fat is severely stunted. Later maturing, larger framed cattle need to be on finishing ration longer than early maturing calves, to ensure they reach correct amount of finish.

The equations below show how to calculate the appropriate gains your animal needs. From there you can use Table 1 to determine the amount of energy and protein to meet that average daily gain goal.

Steer weighs 600 pounds at purchase 9 months from show date. The plan is to grow the steer to 950 pounds on the growing ration in 120 days. The average daily gain needs to be 2.08 lbs/d.

$$(950 \text{ lbs final weight} - 600 \text{ lbs beginning weight}) \div 120 \text{ days} = 2.91 \text{ lbs/d}$$

Finishing ration will start when steer weighs 850 pounds and you want show weight at 1350 lbs in 150 days. The average daily gain needs to be 3 lbs/d

$$(1350 \text{ lbs final weight} - 850 \text{ lbs beginning weight}) \div 150 \text{ days} = 2.67 \text{ lbs/d}$$

Feed intake is important is one of the primary drivers to develop feeding strategies. Most cattle consume between 2 and 3 percent of their body weight in dry matter daily. As a percentage of body weight, intakes decrease with age, weight, and condition (fat on animal). For example, a 600-pound steer will consume between 2.5 and 3% of its body weight (15 to 18 pounds) while a 1,300-pound steer will consume 2 to 2.25% of body weight (26 to 29.25 pounds).

Diet types. There are three main diets to feed your steer, and really only two for heifers.

The "starter" is a diet that is low in energy, high in roughage and fiber, and has the highest protein of the feeds you will offer to your cattle. Often times starter rations will contain antibiotics. Starters are important for newly weaned calves and are fed for 2 to 4 weeks, depending on previous care of the calf. Most of the medicated calf starters are restricted to use for 2 weeks because the antibiotic can not be fed longer. Read the feed label to determine antibiotic feeding requirements.

Ideally, all cattle will be placed on a starter ration first, before being transitioned to the "grower" ration. However, if you have purchased a calf that has already been consuming a mixed ration, you may start them on a grower. A grower is a diet for cattle in the growing stage, roughly 500 to 900 pounds. A grower should contain at least 12% crude protein, moderate fiber (15-20% crude fiber) and moderate energy. The moderate energy is important as we want calves to put on frame and muscle during the growing period, not as much fat. Fat will be deposited primarily in the finishing diet. If supplying too much energy and making calves too fat at a lighter weight, you have stunted their growth and will prevent them from reaching ideal market weight (~1,300 to 1,350 pounds) at an acceptable backfat thickness (~0.5 inches).

The grower diet is the most important diet for show heifers. You will not need to offer your show heifer a finishing diet or they will get too fat. Feeding a grower ration to your heifers at 1 to 2% of body weight with 1 to 2% of body weight as grass hay is the best way to grow your replacement heifer.

“Finishing” diet is the last phase of feeding. These are high in energy, lowest in protein (Crude protein <12%), and lowest in fiber (12-16% crude fiber). A finishing diet will consist of at least 50% corn. If you find that your calf is not gaining enough weight, or is not getting fat enough, increasing energy of finishing ration is important. This should be done by adding liquid fat, not more corn. If you offer too much corn, especially too rapidly, then you will have bloat, acidosis, and founder issues. Make sure though, that you are not feeding more than 4% total dietary fat to the animal as this can kill rumen microbes and lead to reduced performance and gut issues.

Starting cattle on feed and diet transitions. The safest way to start cattle on feed is to offer a good-quality grass hay (prairie, brome, fescue) free-choice and feed 0.5% of animal's weight as a concentrate feed. If that concentrate feed is corn, for a 600-pound calf, start by feeding 3 pounds of corn. If a commercial “starter” is being fed, if crude fiber is >20%, first read label feeding directions. If there are no guidelines about introducing diet to cattle, start with free-choice grass hay and 0.5% of body weight as feed. Every 7 to 10 days increase concentrate/commercial feed by 0.5% of body weight. Remember, your calf should be gaining weight over this time frame. Hopefully the calf is gaining ~1.5 lbs/d, therefore you need to now be feeding a total of 1% of body weight as commercial feed/concentrate for a 610-pound steer (1.5 lb/d average daily gain x 7 days + 600-pound starting weight). After a week on feed you need to be feeding 6 pounds of concentrate/commercial feed and 12.3 pounds of grass hay. By the third week on feed, “starter” should be fed at 1.5% of body weight with either free-choice hay or hay fed to total entire feed offering to 3% of body weight. Continuing in my example, that 600-pound steer you started on feed should be weighing ~631-pounds, three weeks after starting to feed calf and now you should be feeding 9.5 pounds per day of commercial feed and free-choice hay or feeding hay at 9.5 pounds of hay a day (or free-choice grass hay).

On weeks 3 or 5 (depending on length of time you are feeding starter), you need to start transitioning calf to grower diet. When transitioning between starter and grower, you can replace 25% of the starter grain/commercial feed with grower diet every 3 to 5 days until the entire concentrate portion of diet is grower. Remember, your calves are gaining weight, so each week, you will need to increase amount of concentrate offered to calves. On starter ration a good average gain values can be 1.25 to 2 pounds/day while on grower 2 to 3 pounds/day.

Another option to start cattle on feed would be to skip a “starter” ration, especially if calves have already been on a concentrate feed prior to purchase, and start calves on a grower ration. The starter ration is highly recommended if you are feeding a newly weaned calf.

If choosing to start calves with a grower, because you know they have already been consuming concentrate, follow the same guidelines as for the starter by starting growing concentrate at 0.5% of body weight and increasing by 0.5% of body weight every 7 to 10 days until they are consuming 2.5% of body weight of growing feed.

Feeding cattle on a body weight basis, is the most accurate way to feed cattle, but if you are not as comfortable doing the math, you can be safe by increasing grower concentrate feed by 1.5 pounds every 7 to 10 days for first 5 weeks, then bump concentrate amount up 0.5 pounds every week to account for calf gains, until your calf is close to 900 pounds, then transition to finishing ration. When transitioning to finishing ration, feed 25% of concentrate feed as finisher and 75% as grower for 7 to 10 days, then bump finisher 25% (as replace grower) every 7 to 10 days until no grower is being fed. It will take 4 weeks to completely transition to the finishing diet. Most commercial finishers for show cattle contain at least 50% corn

Feeding Replacement Heifer

Show heifers are not only used as a 4H project, but they must be able to become a reproductive animal that can survive on a foraging system as a cow, once the show season is finished. As such, show heifers need to be in a good body condition for showing, but not so overly conditioned that their milk potential is severely reduced. Heifers that are too fat also have issues breeding, calving, milking, and then re-breeding as a first calf heifer. Heifer daily gains will be much lower than steer gains because a show heifer does not need to be mature at show time. Depending on age of heifer and show time, your heifers targeted weights should correspond to when you plan on making the heifer a reproductive female. In general heifers need weigh about 85% of their mature weight at 2-years of age and if you are planning on breeding your heifer as a yearly she needs to weigh ~60% of her mature weight. If you have a large framed continental heifer her mature weight will probably be around 1400 pounds, therefore as a 2-year old you would like her to weight to be at least ~1190 pounds and a breeding weight at a year of age of ~840 pounds.

Once again you can do the calculations as described in the feeding market steer section to determine appropriate average daily gains for your heifers and use Table 2 to determine nutrient requirements to meet your objectives.

Example rations

The table below provides some example cattle rations to be fed as a supplement to hay (for example a heifer diet) or as a complete ration. Please read the footnotes prior to having a feed mill make any of these rations to aid in determining how to feed these rations. The amounts of feed to include are the batch-sheet which makes a ton of feed. Additionally, working with your extension professional or ruminant nutritionist can be a useful way to develop a ration to meet your animal's requirements, and before using any of these example diets, work with a nutritionist to determine best methods of feeding.

Feed Ingredient	<u>Starter/Grower (1)</u>		<u>Grower/Finisher (2)</u>		<u>Finisher (3)</u>	<u>Finisher (7)</u>
	Supplement (4)	Ration (5)	Supplement (6)	Ration (5)	Ration (5)	Ration (5)
Corn	1150	425	1350	845	1160	1275
Oats	400	200	250	200	200	--
SBM – 44%	300	320	250	265	220	--
Dried Distillers	--	--	--	--	--	437
Grains	--	--	--	--	--	--
Cottonseed	--	920	--	560	290	100
Hulls	--	--	--	--	--	--
Soy Hull pellet	--	--	--	--	--	72
Molasses	100	100	100	100	100	75
Limestone	20	20	30	20	20	20
TM Salt	20	10	20	10	10	20
Dicalcium phosphate	10	5	--	--	--	--
ADE (4 mil IU A/lb)	1.5	0.50	1	0.50	0.50	0.50
Ration Diet Composition (% as-is basis)						
Dry Matter	88.3	89.5	88.2	88.9	88.4	88.9
Crude Protein	14.3	12.1	13.2	12.0	11.9	11.5
TDN	73.9	58.2	75.1	65.5	70.8	73.8
Calcium	0.60	0.58	0.68	0.50	0.49	0.49
Phosphorus	0.43	0.28	0.33	0.27	0.29	0.36
Fat	3.1	2.0	3.1	2.5	2.9	3.9
Crude Fiber	4.2	22.5	3.4	14.9	9.2	6.7

Rations 1-3 adapted from George V. Davis Jr. Beef Cattle Nutrition, Arkansas 4-H Beef Clinic. Ration 7 developed for example purposes within K-State system with estimated steer gains between 2.75 and 3.5 lbs/d.

- (1) For steers over 500 lbs expect 1.75 to 2.25 lbs average daily gain. For heifers over 500 lbs expect 1.25 to 1.75 lbs/d.
- (2) For steers expect 2.5 to 3.0 lbs/d gain. For heifers 1.75 to 2.25 lbs/d.
- (3) For steers expect 2.75 to 3.5 lbs/d gain. Excellent feeding management is needed with this ration.
- (4) Feed supplement at 1% of cattle body weight with good quality hay or pasture to be consumed at 1.5% of body weight.
- (5) Feed twice daily all cattle with consume in 30 to 45 minutes. Start feeding with hay and then gradually remove hay as adaption occurs, as described in roughages section.
- (6) Feed at 1.5% of body weight with good quality hay to be consumed at 1% of body weight.

Table 1. Nutrient Requirements of Growing Steer and Heifer Calves with finishing weight of 1,300 lb

			Diet Nutrient Density						Daily Nutrients per Animal			
Wt ^a	Gain ^b	DMI ^c	TDN	NEm	NEg	CP	Ca	P	TDN	NEm	NEg	
(lbs)	(lb/d)	(lbs)	(%DM)	(Mcal/lb)	(Mcal/lb)	(%DM)	(%DM)	(%DM)	(lbs)	(Mcal/d)	(Mcal/d)	CP (lbs)
Pregnant yearling heifers - Last third of pregnancy												
715	0.76	18.5	50	0.45	0.20	7.3	0.22	0.13	9.3	5.89	1.13	1.35
	2.11	19.6	60	0.61	0.35	10.2	0.36	0.19	11.8	5.89	3.45	2.00
	3.21	19.1	70	0.76	0.48	13.0	0.49	0.24	13.4	5.89	5.47	2.48
845	0.76	18.5	50	0.45	0.20	6.9	0.21	0.13	10.5	6.67	1.28	1.45
	2.11	22.2	60	0.61	0.35	9.1	0.32	0.17	13.3	6.67	3.91	2.02
	3.21	21.7	70	0.76	0.48	11.4	0.42	0.22	15.2	6.67	6.20	2.47
975	2.11	24.7	60	0.61	0.35	8.3	0.28	0.16	14.8	7.43	4.35	2.05
	3.21	24.1	70	0.76	0.48	10.2	0.37	0.19	16.9	7.43	6.90	2.46
	3.99	22.8	80	0.90	0.61	11.9	0.44	0.23	18.2	7.43	8.76	2.71
Finishing weight is based on 28% percent body fat. This table is a small representation of nutrient requirements of beef cattle. Values are from the Beef Nutrient Requirement Council (NRC).												

Table 2. Nutrient Requirements of Breeding Heifers

			Diet Nutrient Density						Daily Nutrients per Animal			
			TDN	NEm	NEg	CP	Ca	P	TDN	NEm	CP	Vit. A ^d
Wt ^a	Gain ^b	DMI ^c	(%DM)	(Mcal/lb)	(Mcal/lb)	(%DM)	(%DM)	(%DM)	(lbs)	(Mcal/d)	(lbs)	(1000 IU)
Pregnant yearling heifers - Last third of pregnancy												
700	1.4	15.8	60.3	0.60	0.34	9.0	0.33	0.21	9.6	7.95	1.4	20
700	1.9	15.8	67.0	0.70	0.43	9.8	0.33	0.21	10.6	7.95	1.5	20
800	1.4	17.4	59.6	0.59	0.33	8.8	0.33	0.21	10.4	8.56	1.5	22
800	1.9	17.5	66.1	0.69	0.42	9.3	0.35	0.21	11.6	8.56	1.6	22
900	0.9	18.3	54.3	0.51	NA	8.1	0.26	0.20	9.9	9.15	1.5	23
900	1.4	19.0	59.1	0.58	0.32	8.5	0.30	0.21	11.3	9.15	1.6	24
900	1.9	19.2	65.4	0.68	0.41	9.0	0.32	0.21	12.5	9.15	1.7	24
Two-year-old heifers nursing calves - First 3-4 months post-partum - 10 lbs milk/day												
700	0.5	15.9	65.1	0.67	0.4	11.3	0.36	0.24	10.3	9.20 ^f	1.8 ^g	28
800	0.5	17.6	63.8	0.66	0.39	10.8	0.34	0.24	11.2	9.81 ^f	1.9 ^g	31
900	0.5	19.2	62.7	0.64	0.37	10.4	0.32	0.23	12.0	10.40 ^f	2.0 ^g	34
1000	0.5	20.8	61.9	0.62	0.36	10	0.31	0.23	12.9	10.98 ^f	2.1 ^g	37

^aAverage weight for a feeding period.

^b Approximately 0.9 + 0.2 pound of weight gain/day over the last third of pregnancy is accounted for by the products of conception. Daily 2.15 Mcal of NEm and 0.1 pound of protein are provided for this requirement for a calf with a birth weight of 80 pounds.

^c Dry matter consumption should vary depending on the energy concentration of the diet and environmental conditions. These intakes are based on the energy concentration shown in the table and assuming a thermoneutral environment without snow or mud conditions. If the energy concentrations of the diet to be fed exceeds the tabular value, limit feeding may be required.

^d Vitamin A requirements per pound of diet are 1,273 IU for pregnant heifers and cows and 1,773 for lactating cows and breeding bulls.

^e Not applicable.

^f Includes 0.34 Mcal NEm/pound of milk produced.

^g Includes 0.03 pound protein/pound of milk produced.

Where's the Beef? Alternative Proteins

Dr. Ann Brackenridge, Research, Development & Innovation Foodservice Manager
Cargill Protein
Cargill



INNOVATION IN PROTEIN

Ann Brackenridge, PhD
Cargill Protein

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4 Types of Protein Consumers



Vegans
4 Million

No animal products
EVER! – including
eggs, dairy,
beeswax and honey

Taste Expectations

Green, Plant-Based Taste
and Texture



Vegetarians
7.3 Million

Abstain from eating
meat – some
variations may eat
fish or chicken

Taste Expectations

Bean Burgers, Alternative
Grains, Produce, Plant-
Based Taste & Texture



Flexitarians
26 Million

Lead a plant-based
diet with some
meat – mostly for
environmental
principles

Taste Expectations

Interested in Trendy Formats
– Adzuki Burgers, By Chloe,
Beyond Sushi, and Cross
Between Plant & Meat



Carnivores
323 Million

Meat & potatoes
person – the more
meat the better

Taste Expectations

Veggie Burgers Better Bleed
– Like Impossible Foods
Burger with Heme
Properties

*Vegetarian Research Group 2013, HuffPostImpact 2016, US Census Bureau 2016, CBC Business News 2016, Kerry
Internal Analysis 2016

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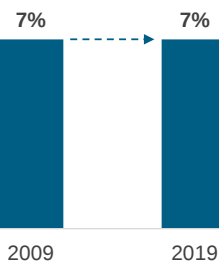


Has There Been Rapid Growth in Vegetarianism? No.

Vegan/Vegetarian

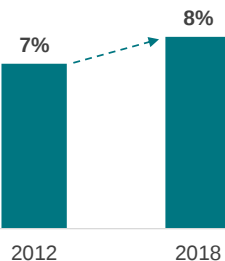


National Cattlemen's
Beef Association

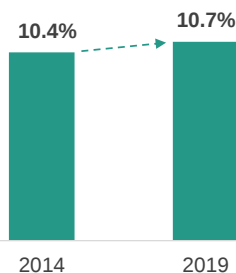


Vegan/Vegetarian

GALLUP



Vegan, Vegetarian, Flexible Vegetarian



Foodservice

Source: NCBA Webinar on All Proteins, August 2019
NPD: The Future of Plant Based Proteins (2019), 2019
Gallup Snapshot: Few Americans Vegetarian or Vegan, August 2018

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Innovation

Traditional



Alternative Proteins



Other

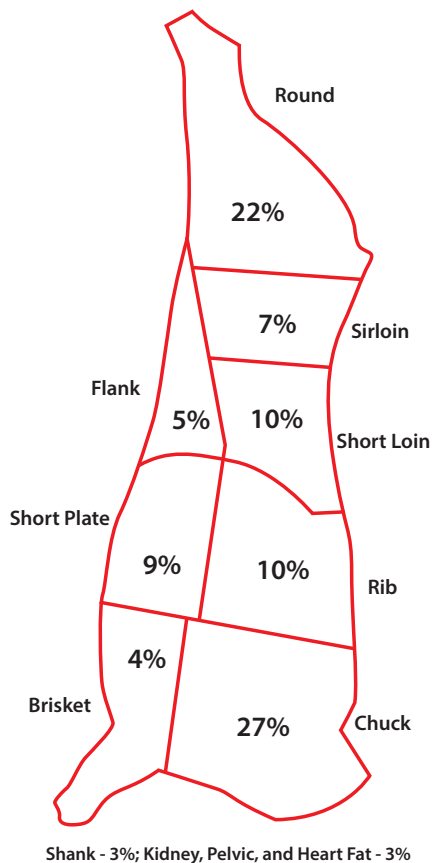
Where
would
you
invest?

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Beef Processing Options for Consumers



The primal cuts of beef as a percentage of carcass weight.

This guide explains choices available to consumers when they take a beef animal to be processed. It provides information on the approximate amount of meat that should be returned from each primal after the animal has been prepared to customer specifications.

Chuck: The chuck is commonly cut into bone-in or boneless roasts of specified thickness or weight. Alternatively, the chuck can be cut into bone-in steaks and some boneless steaks. Ranch steaks, flat iron steaks, and petite tender steaks are boneless

steaks commonly produced from the chuck. Some of the chuck also can be used for stew meat or ground beef.

Rib: Normally, the rib is cut into either bone-in ribeye steaks or boneless ribeye steaks and back ribs. Consumers may prefer the rib to be cut into either boneless or bone-in roasts for cooking of prime rib.

Short loin: Two options for cuts from the short loin are T-bones and porterhouse steaks or boneless New York strip steaks and tenderloin steaks (filets). T-bones and porterhouses are larger cuts. The boneless options are typically selected by consumers who desire smaller portion sizes.

Sirloin: The sirloin can be cut into either boneless or bone-in steaks. Because of the large size of bone-in sirloin steaks, customers may prefer smaller boneless alternatives. Additionally, the coulotte roast (sirloin cap) can be cut from the sirloin or cut as part of the sirloin steaks. The tri-tip is typically cut as a roast from the sirloin as well.

Round: Cut options from the round include tip roasts, rump roasts, heel roast, and top, bottom, and eye-of-round roasts of a specified size and weight. The round can also be cut into steaks, with many customers choosing to have some of these steaks tenderized (for chicken fried steak) or to have this product produced into ground beef.

Ground beef: Consumers can specify leanness of ground beef, commonly 90%, 80%, or 70% lean, but can expect fewer pounds of ground beef with increased lean points.

Miscellaneous: Each carcass half has one brisket and flank steak as well as two skirt steaks. Briskets can either be whole or cut into two halves (flat half and point half). The plate can be returned as short ribs or used for ground beef. Organs (heart, liver, kidneys, oxtail, and tongue) are optional.

Beef Cutout Tables

The numbers below are based on an 800-pound, Low Choice, Yield Grade 3 carcass and represent the industry average. A 3% shrink (cooler shrink and cutting loss) is assumed. The table shows boneless and bone-in options and the approximate weight and percentage of the hot (unchilled) carcass represented by each.

Boneless Option	% of Hot Carcass	Weight (lbs)
Chuck		
Chuck eye roasts or steaks	4.1	32.8
Mock tender roasts or steaks	0.8	6.2
Flat iron steaks	1.3	10.3
Shoulder petite tender steaks	0.3	2.1
Ranch steaks or boneless arm roasts	1.5	12.3
Denver steaks	0.8	6.2
Boneless short ribs	0.3	2.1
Ground beef / stew meat	12.8	102.6
Fat and bone	3.8	30.8
Rib		
Ribeye steaks or boneless rib roasts	3.5	28.1
Back ribs	1.0	7.9
Ground beef or stew meat	3.2	25.8
Fat and bone	1.8	14.4
Loin		
Strip loin steaks	3.1	24.5
Tenderloin steaks or roasts	1.5	11.6
Top sirloin steaks (cap-off)	2.1	16.8
Coulotte (sirloin cap)	0.5	3.9
Tri tip roast	1.1	9.0
Ground beef	4.2	33.6
Fat and bone	3.7	29.7
Round		
Top round steaks and roasts	5.6	45.1
Bottom round steaks and roasts	3.7	29.4
Eye of round steaks and roasts	1.3	10.8
Tip steaks and roasts	2.9	23.4
Ground beef / stew meat / kabob meat	2.9	23.3
Fat and bone	4.4	35.1
Miscellaneous		
Brisket	3.2	25.8
Flank steak	0.5	3.8
Short ribs	6.3	50.2
Skirt steaks	1.1	9.1
Kidney, pelvic, and heart fat	2.0	16.0
Ground beef	5.4	43.1
Fat and bone	6.3	50.2
Total steaks and roasts	46.4	371.4
Total ground beef / stew meat	28.6	228.5
Total fat and bone	22.0	176.2

Bone-in Option	% of Hot Carcass	Weight (lbs)
Chuck		
Blade roasts and steaks	10.2	81.8
Bone-in arm roasts and steaks	7.6	60.9
Ground beef / stew meat	5.0	39.9
Fat and bone	2.8	22.7
Rib		
Bone-in ribeye steaks or roasts	4.5	35.7
Ground beef / stew meat	3.2	25.8
Fat and bone	1.8	14.4
Loin		
T-bones and porterhouses	4.5	36.2
Bone-in sirloin steaks	3.1	24.5
Tri tip roast	1.1	9.0
Ground beef	4.2	33.6
Fat and bone	3.2	25.8
Round		
Top round steaks and roasts	5.6	45.1
Bottom round steaks and roasts	3.7	29.4
Eye of round steaks and roasts	1.3	10.8
Tip steaks and roasts	2.9	23.4
Ground beef / stew meat / kabob meat	2.9	23.3
Fat and bone	4.4	35.1
Miscellaneous		
Brisket	3.2	25.8
Flank steak	0.5	3.8
Short ribs	6.3	50.2
Skirt steaks	1.1	9.1
Kidney, pelvic, and heart fat	2.0	16.0
Ground beef	5.4	43.1
Fat and bone	6.3	50.2
Total steaks and roasts	55.7	445.9
Total ground beef / stew meat	20.7	165.7
Total fat and bone	20.5	164.2

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Kassandra McKillip
Graduate Research Assistant
Kansas State University

Alaena Wilfong, 4-H/Youth
Development Extension Educator
University of Idaho

Travis O'Quinn, Ph.D., Assistant
Professor, Kansas State University

Reviewed by:

Kara Mayer, Agriculture and Natural Resources Agent, K-State
Research and Extension – Wabaunsee County; **Lexie Hayes**, Youth
Livestock Coordinator, Kansas State University

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF3395— February 2018

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How Much Meat to Expect from Your Animal

Have you ever taken your steer to the butcher at 1,300 pounds and been confused when you were only returned 500 pounds of cut and packaged beef? Like many consumers, you may be unaware of the steps in animal processing that result in changes in product weight. Some changes occur in converting the live animal to a carcass, and more before the animal becomes packaged meat. This guide explains the process and provides tools to help you determine the amount of meat to expect when you have an animal harvested.

- Hide or wool weight
- Horns
- Animal muscling and fatness

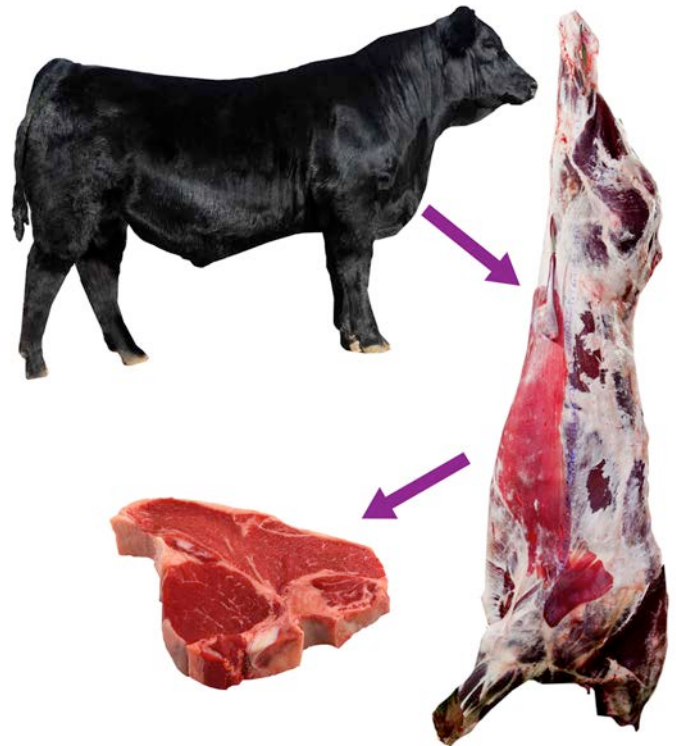
From live animal to carcass in the cooler

The first step is to convert the live animal to a carcass. The amount of the live animal's weight represented by the carcass, or *dressing percentage*, can be calculated as follows:

Dressing percentage: (carcass weight ÷ live weight) x 100

Next, the animal's blood, hide, and internal organs are removed, which results in weight loss. The amount of weight lost is highly variable and can be affected by many characteristics, including:

- Mud or manure on the hide of the animal
- The amount of food in the animal's stomach (gut fill)
- Bruises that must be trimmed from the carcass



Species differences

The dressing percentage varies for each species because animals carry body weight differently. Pork has the highest dressing percentage (70-75%) because skin and feet remain on the carcass, and because hogs are monogastrics with single-compartment stomachs. Lambs have the lowest dressing percentage (54-59%) because of heavy hides and less muscling on the carcass. The beef dressing percentage (60-64%) falls between pork and lamb.

Average dressing percentage
for the three major meat species

Species	Average dressing percentage (%)
Pork	70-75
Beef	60-64
Lamb	54-59

From whole carcass to retail cuts

Estimating the carcass weight of an animal is fairly easy because the process is standard across the industry. Predicting the weight returned as cuts of meat is much more difficult. A carcass can be processed into cuts (steaks, roasts, and ground meat) in multiple ways. The final weight varies depending on the processing style and cuts requested. Customers have many options and may be able to customize their order, adding even more variability to the equation. Here are a few choices that can affect the weight of the finished product:

- **Bone-in vs. boneless cuts:** Removing the bone results in less weight returned as product.
- **Fat percentage in the ground product:** A leaner product produces fewer pounds of ground meat.
- **Aging:** Longer aging periods improve meat tenderness but lead to moisture loss and less weight returned.
- **Type of aging (dry-aged vs. wet-aged):** Dry-aged products result in more moisture loss due to dehydration and additional trimming losses due to surface crust removal.
- **Further processing:** Having cuts processed into cooked sausages, hams, bacon, corned beef, and similar products results in fewer pounds of returned product because of the moisture lost during the cooking process.

The amount of meat returned after harvesting an animal varies. The following examples should help consumers understand where the weight of the live animal goes and guide expectations on the approximate amount of meat to expect. Other fact sheets in this series describe processing options for individual species.

Example for beef:

Live weight = 1,290 lbs

Actual dressing %: 62%

Carcass weight = 800 lbs

Bone-in option: 65-70% of carcass weight

Boneless option: 55-60% of carcass weight

Approximate bone-in meat returned = 520 lbs

OR approximate boneless meat returned = 440 lbs

Example for pork:

Live weight = 285 lbs

Actual dressing %: 72%

Carcass weight = 205 lbs

Bone-in option: 75-80% of carcass weight

Boneless option: 65-70% of carcass weight

Approximate bone-in meat returned: 154 lbs

OR Approximate boneless meat returned = 133 lbs

Example for lamb:

Live weight = 132 lbs

Actual dressing %: 55%

Carcass weight = 70 lbs

Bone-in option: 70-75% of carcass weight

Approximate bone-in meat returned = 50 lbs

References

Economics and Marketing: Understanding Dressing Percentage of Slaughter Cattle. 2000. Alberta Agricultural and Forestry. Available from: [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/sis12389](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/sis12389)

Meat Yield, Quality and Value. 2008. Alabama Cooperative Extension System. Available from: http://www.aces.edu/pubs/docs/A/ANR-1323/ANR-1323_7.pdf

The butcher kept your meat? Christopher R. Raines. Penn State University. Available from: <http://animalscience.psu.edu/extension/meat/pdf/The%20Butcher%20Stole%20My%20Meat.pdf>

Prepared by:

Alaena Wilfong, 4-H/Youth Development Extension Educator, University of Idaho

Travis O'Quinn, Ph.D, Assistant Professor, Kansas State University

Reviewed by:

Kara Mayer, Agriculture and Natural Resources Agent, K-State Research and Extension - Wabaunsee County; **Lexie Hayes**, Youth Livestock Coordinator, Kansas State University

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State Livestock Nomination Process

Lexie Hayes, Youth Livestock Program Coordinator
Department of Animal Sciences & Industry
Kansas State University

State Livestock Nomination Process

Lexie Hayes

Youth Livestock Program Coordinator
2020



Nomination Process Overview

- Must formally nominate **market** or **commercial female** animals to be shown at a state show:
 - ✓ Kansas State Fair (Grand Drive)
 - ✓ Kansas Junior Livestock Show (KJLS)
- 2020 Nomination Paperwork MUST be used
 - ✓ "February 2020" on bottom of forms
 - ✓ All other forms will be returned to you
- 2020 Nomination Information and Forms available via:
 - ✓ Extension Offices
 - ✓ K-State Youth Livestock Program website

www.youthlivestock.ksu.edu



Nomination Information

OR



<http://bit.ly/ksunominations>



Postmark Deadlines

May 1, 2020

Market Beef

June 15, 2020

Market Lambs, Commercial Ewes, ALL Meat Goats, Market Swine, Commercial Gilts, and Commercial Heifers



Nomination Process

Step 1: Animals eligible for KJLS or KSF will need a Kansas 4-H EID ear tag placed in the ear of the animal **BY THE AGENT**



- ✓ Speak with your local Extension Office to let them know you want to state nominate animals

Step 2: Exhibitors will fill out the Declaration Form & specie Nomination Form(s)



- ✓ Print from <http://bit.ly/ksunominations> or request from Extension Agent
- ✓ Attach YQCA certificate or copy of Youth PQA+ card to Declaration Form

Step 3: Exhibitors will pull a DNA sample from the animal and place it in an official DNA envelope (DO NOT CUT THE HAIR)



- ✓ Envelopes may be obtained from local Extension Office
- ✓ Instructions on pulling DNA are in educational resource or on the youth livestock website
- ✓ Instructional videos on youth livestock website (under DNA Collection Instructions)



Nomination Process

Step 4: Exhibitors will have their agent sign declaration/nomination paperwork & place tag barcode stickers on forms

Step 5: Exhibitors will mail their completed **declaration form, YQCA certificate(s), nomination form, DNA, and payment** to be processed by KSU

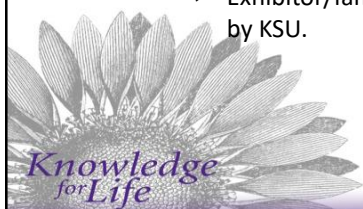


✓ Certified mail is HIGHLY suggested (\$4.00-\$8.00 for peace of mind)

Step 6: KSU will process these nominations and post weekly updates online regarding complete/incomplete nominations.

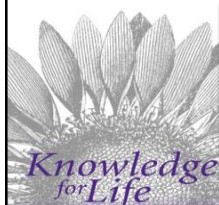


- ✓ Once processed, letters sent to families stating if nomination is complete/ incomplete.
- ✓ Exhibitor/family's opportunity to verify the accuracy of the nomination information received by KSU.



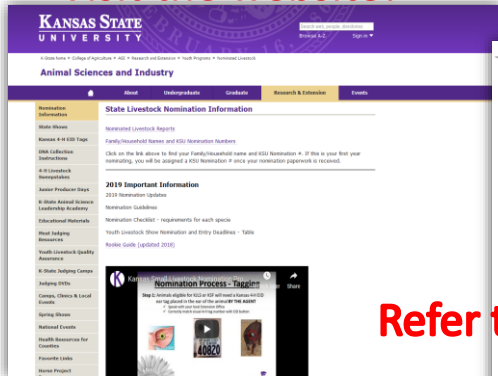
Nomination Materials to Mail

- Declaration Form (with YQCA certificates attached)
- Specie Nomination Form
- DNA Envelopes
- Payment - \$8/animal made payable to KJLS



Tips & Resources

Visit the website!



Use the specie checklist!

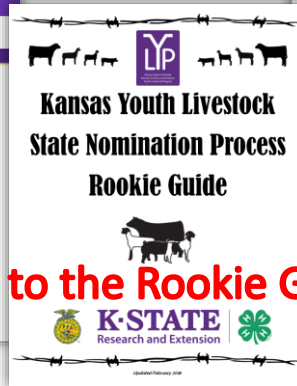
CHECKLIST

MARKET BEEF (Market Steer/Heifer) NOMINATION FORM

Have a market steer or market heifer to nominate, what do I need to turn in?

- ☐ Completed Household Declaration Form (www.YouthLivestock.KSU.edu) Double check that no field has been left blank or incomplete. If you have marked "No" for the housing question in Section 1, you must complete Section 2, including listing the species and how you will care for projects not located at your primary residence.
- ☐ Tagged Your Animal by May 1 with a Kansas 4-H Electronic Identification (EID) tag.
- ☐ Completed Market Beef Nomination form (www.YouthLivestock.KSU.edu) including all contact information, signatures, tag numbers, and breeds. Make sure 4-H tag numbers on the form match those on the DNA envelopes.
- ☐ Completed DNA Hair Sample Envelope, in official, sealed envelope; hair must be pulled, not cut. Obtain at least 40 follicles. All family exhibitors and a parent/guardian must sign the front of the DNA envelope.
- ☐ \$8.00 per animal nomination fee. Make checks payable to KJLS.
- ☐ All of the above must be completed and postmarked by May 1. Certified Mail highly encouraged.

Refer to the Rookie Guide!



If it's on the form – it's required!

INCOMPLETE FEE

\$20 ONE TIME/ YEAR INCOMPLETION FEE
IF PAPERWORK HAS TO BE RETURNED FOR ANY REASON, ANY FIELD IS BLANK, OR ANY NOMINATION MATERIALS ARE MISSING.

2020 Nomination Process Tentative UPDATES

- YQCA certification required for all exhibitors
 - ✓ Certificate needs to be attached to Declaration Form at time of nomination (May 1)
 - ✓ Annual certification; must be valid through 10/4/2020 to be accepted
 - ✓ Valid Youth PQA+ #s accepted until they expire
 - ✓ Instructor-led training suggested for 7 year olds; required for them @ KJLS in 2021
- Declaration Form – verbiage modification
- Specie Nomination Forms – verbiage modification
- Exhibitors are encouraged to write the breed and secondary ID info in the lower right corner of DNA envelopes
- *Tattoo no longer required for a commercial heifer*



Show Entry

- **REMINDER:** A livestock nomination is **NOT an entry** for Kansas Junior Livestock Show or Kansas State Fair. It simply makes animals eligible to be exhibited.
- K-State processes and manages nominations, but KSF and KJLS manage their own shows and entry processes.
 - ✓ 3 SEPARATE processes
- Exhibitors must submit an entry online through [ShowWorks](#) for each of these shows once they have completed the nomination process.
 - ✓ get entry information from Extension Office OR show website(s)
 - ✓ also provided on nomination checklist for each specie



Kansas State Fair – Grand Drive



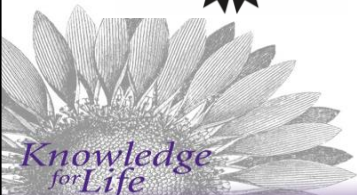
- Date: September 11-20, 2020
- Grand Drive: September 10-13, 2020
- Show held in Hutchinson, KS
- Entries Due: July 15
- www.kansasstatefair.com



Kansas Junior Livestock Show



- Date: October 2-4, 2020
- Show held in Hutchinson, KS (State Fair Grounds)
- Entries Due: August 15
- www.kjls.org



Thank You!

adhayes@ksu.edu

(785)532-1264

www.YouthLivestock.ksu.edu



Kansas State Youth Livestock Program



CATTLE HAIR SAMPLE COLLECTION INSTRUCTIONS



1 Check the ear tag number of the animal, and record it on the hair sample envelope.

We strongly recommend that you collect tail switch hair. If this is not an option, then collect hair from the poll, neck or tail head. Clean the sample

area with a paper towel to remove excess dirt if necessary.

Use bent, long or needle nose pliers to collect the sample.



2 Grasp hair close to skin with pliers and pull directly away from the skin. Take at least two pulls. Make sure that the sample has at least 30 hair roots. If tail switch is not available, then take at least 5 pulls from the poll, neck or tail head.



3 Inspect the hair sample to ensure at least 30 hair follicles.

Do NOT cut the hair from the animal. The hair MUST CONTAIN ROOTS for DNA testing. Avoid touching the roots and make sure the hair is dry.

Place hairs in the sample envelope and seal the envelope. Do not put hairs in a plastic bag.



4 Fill out the remaining information lines on the envelope, and have the witnesses sign.

REMEMBER: Cleanse hands and pliers between animal samples to ensure that hairs from different animals are not mixed.



CATTLE HAIR SAMPLE CHECKLIST

- ✓ Insert ear tag number on the envelope
- ✓ Collect hair from tail switch
- ✓ Obtain at least 30 hairs with follicles
- ✓ Take at least 2 pulls
- ✓ Inspect for follicles—do NOT touch follicles
- ✓ Obtain exhibitor signature & seal envelope
- ✓ Clean pliers and hands between animals

2020 Kansas State Youth Livestock

Nomination Guidelines



In order to show at the Kansas State Fair (KSF) or Kansas Junior Livestock Show (KJLS), you must first nominate your animal.

What is a nomination? A nomination is documentation that you have owned, possessed and cared for your animal since a certain date in order to show at a state show.

How are the nomination dates set? The nomination dates are set by minimal guidelines set forth by Kansas 4-H on how long you should own, possess and care for your animal to have gained the optimal experience. In addition, the KSF and KJLS Board of Directors agree on these dates.

What are the nomination dates?

May 1 - Market Steers and Market Heifers

June 15 - Commercial Heifers, Market Lambs, Commercial Ewes, Market Hogs, Commercial Gilts, and ALL Meat Goats (Market Goats, Commercial Does, and Registered Does)

How do I know what to turn in? The Youth Livestock Program has compiled a list of requirements (checklist) for each species.

How much does it cost? The nomination fee is \$8.00 per animal, for all species.

What is the Declaration form? The declaration form is required by all families/households who nominate animals and wish to show at Kansas State Shows (Kansas State Fair Grand Drive or KJLS). This form states the family/household name, along with who is able to show within that family/household. In addition, it lists the physical location of where the animals are kept, and also has a statement about possession, ownership and care of the animals. It must be signed by all individual exhibitors, a parent/guardian, and extension agent/advisor. Each family/household must complete a declaration form annually, which includes all eligible exhibitors for that year.

Is a Nomination the same as an entry for the show? NO! You must first nominate your animal in order to declare that you own, possess and care for them. Then, you must actually enter that animal for the show following the specific entry processes set forth by the Kansas State Fair (KSF) and Kansas Junior Livestock Show (KJLS). You must do both of these things in order to show. *Nominations are sent to the KSU Youth Livestock Program office, but the entries for KSF and KJLS are sent directly to and managed by the respective Livestock Show offices.*

How will I know if my Nomination is complete? Once your nomination is put into the nomination database, you will receive a letter in the mail from the KSU Youth Livestock Program. This letter will list all of the animals that we have in the system from you. A family/household will receive a separate letter for each species nominated. If you are missing information, it will tell you what you are missing and how to fix that issue. In addition, we post the nomination information on our website www.YouthLivestock.KSU.edu under Nominated Livestock so you can see if your nomination is complete. We update this often during the nomination season and highly recommend that you use this tool.

What if I don't get everything in the first time? If your confirmation letter states that something is missing or wrong, **there is a one-time fee of \$20.00.** This includes declaration or nomination form, DNA Envelope, and signatures (exhibitor, parent and agent/advisor). The \$20.00 incomplete fee must be submitted with the missing or corrected information for the nomination to be complete.

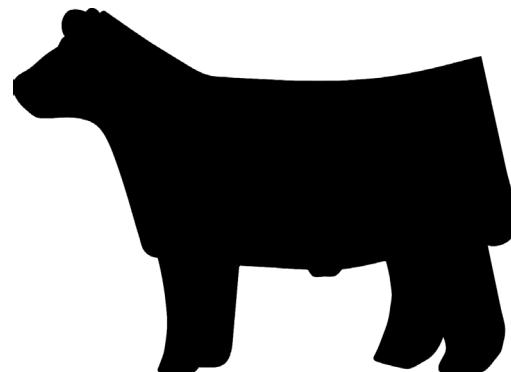
Where do I get ear tags and DNA envelopes? Animals must be tagged and DNA Hair Sample envelopes obtained through your local Extension Office. Make sure you communicate with your local Extension Office far enough in advance for them to have enough tags and official envelopes available for the number of animals you plan to nominate. DNA must be submitted in an official DNA envelope. One type of envelope is available for all species. Please refer to the Step-by-Step page in the "Rookie Guide" for detailed information on obtaining DNA samples from your animals.



Youth Livestock Program · Kansas State University
214 Weber Hall · Manhattan, KS 66506 · 785-532-1264



Biosecurity is another way of saying “infectious disease control.” Biosecurity is a combination of management practices designed to prevent the introduction and transmission of diseases into and throughout a herd. Infectious diseases can be transmitted by animals, people, equipment and vehicles. Livestock exhibitions are events where animals have an increased risk of getting infectious diseases due to the commingling of animals from different sources. Taking some simple precautions can help reduce that risk and keep your animals healthy. Below are some biosecurity recommendations for ensuring the health of your show cattle.



Before the Show

- Read all guidelines for each show to be sure your animals meet all entry and exhibition requirements.
- Work with your veterinarian to ensure your cattle are up to date on vaccinations.
- Evaluate your cattle’s health prior to going to the show. Never take an unhealthy animal to a show. Signs of illness can include decreased appetite, fever, diarrhea, nasal discharge, coughing and blisters around the mouth, nose and/or hooves. If you see any of these signs, please contact your veterinarian.
- Take only clean and disinfected equipment to the show to prevent any potential disease transfer from your cattle to others.

During the Show

- Monitor your cattle daily for signs of illness. If you suspect your animal is sick, notify a show official right away.
- Avoid personal contact with animals other than your own.
- Do not share feed, feed/water tubs, grooming supplies or other equipment with other exhibitors at the show.
- Keep your area and equipment clean of manure contamination.
- Wash your hands frequently with warm soapy water after contact with animals or equipment.

After the Show

- Isolate the cattle you took to the show from the rest of your herd when you return home.
- The show cattle should be as far from the other animals as possible, but they need to be at least far enough away to prevent nose-to-nose contact. Your veterinarian can help you establish a good location.
- Modify your chore routine to care for your show cattle last each day. Do not share equipment between show cattle and any other animals at home.
- Monitor your show cattle daily for signs of illness, including those signs listed in the “Before the Show” section. Contact your veterinarian if any animal shows signs of illness.
- Clean and disinfect all equipment, shoes, vehicles and trailers you took to the show. Allow them to dry completely.
- Talk to your veterinarian to determine the best biosecurity practices for your cattle.

Reproduction in Beef Cattle

Dr. David Grieger, Professor, Beef Cattle Reproduction
Department of Animal Sciences & Industry
Kansas State University

Reproduction in Beef Cattle

Kansas Junior Beef Producer Day
Kansas State University
February 29, 2020

Dr. David Grieger
Dept. Animal Sciences & Industry



Kansas State University
K
Animal Sciences and Industry

1

What is efficiency?

Maximum productivity with
minimal wasted effort

Why is reproductive efficiency important for beef cattle production?

It's not efficient if your heifers and
cows do not have a calf every year

Kansas State University
K
Animal Sciences and Industry

2

What are the different ways to make a calf?

1. Natural Mating



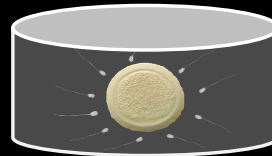
2. Artificial Insemination



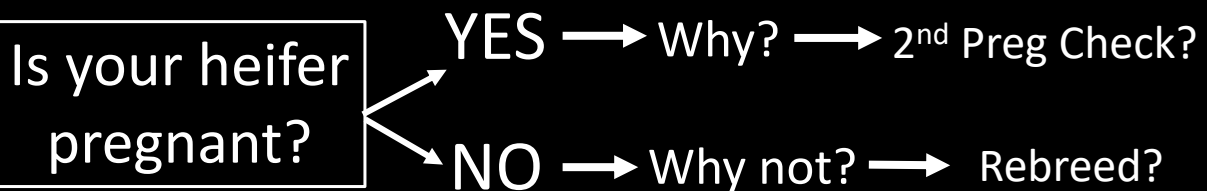
3. Embryo Transfer



4. IVF (In vitro fertilization)



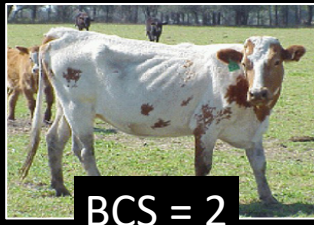
3



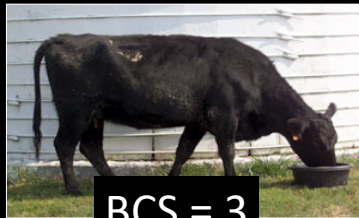
4

What does BCS stand for?

Is BCS important to reproduction?



BCS = 2



BCS = 3



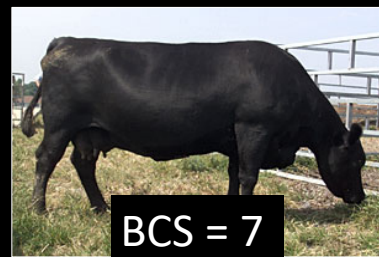
BCS = 4



BCS = 5



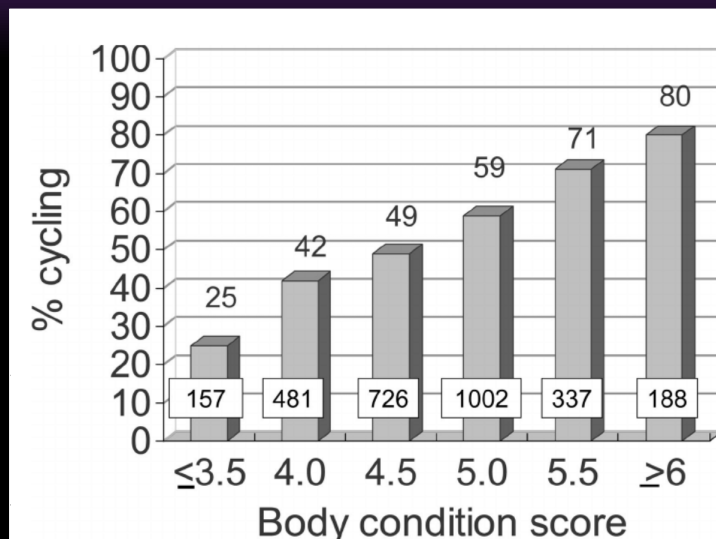
BCS = 6



BCS = 7

5

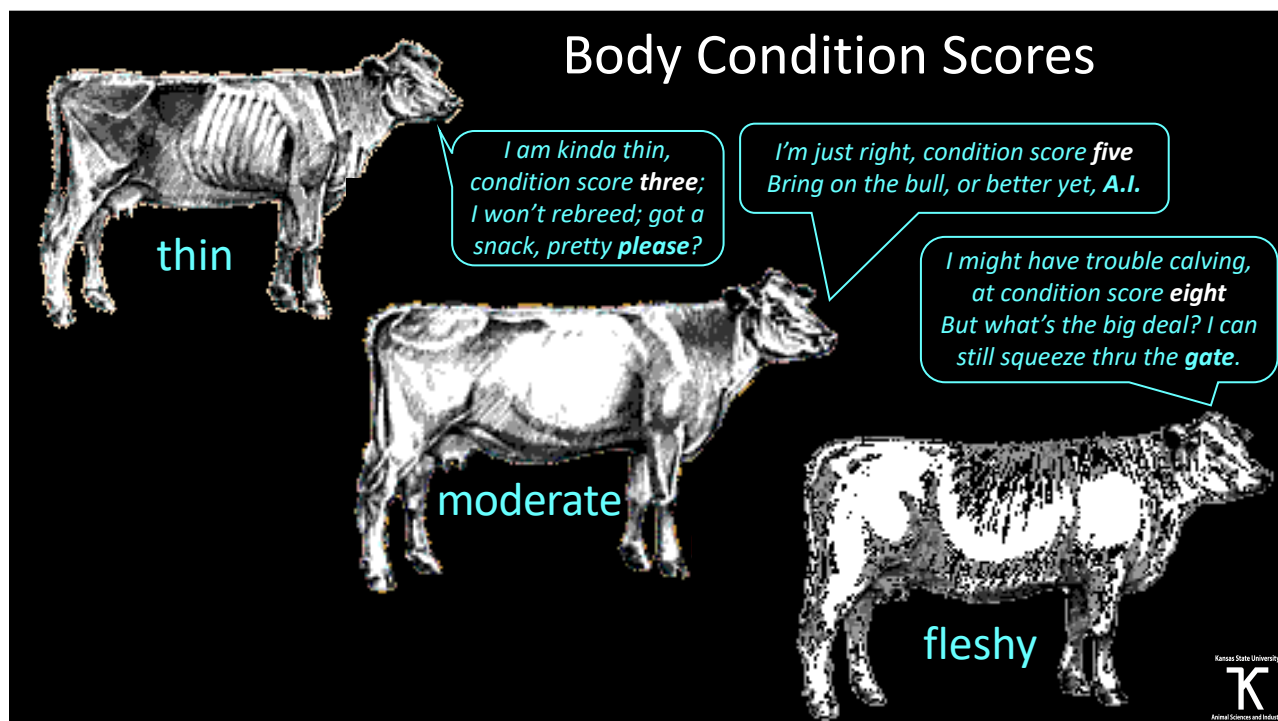
Body condition score and fertility



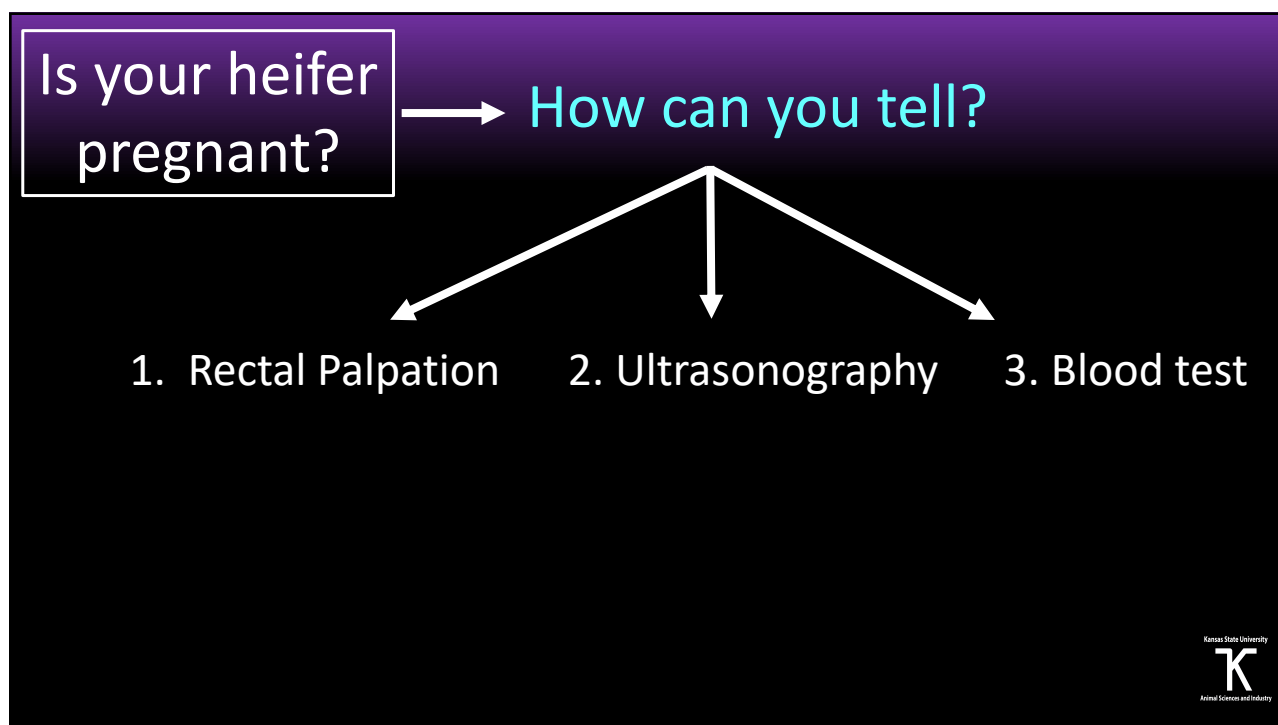
Stevenson, S. K. Johnson, and G. A. Milliken ...Prof Anim. Sci 19:124-134, 2003



6



7



8

How can you tell WHEN is she going to calve?

AGE of FETUS

5 months

4 months

3 months



How long until she calves?

~ 4 months

~ 5 months

~ 6 months

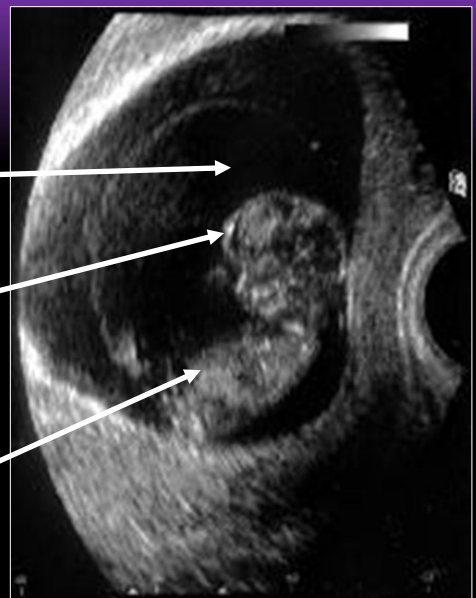
9

Ultrasonography

Black on monitor = Not dense (fluid)

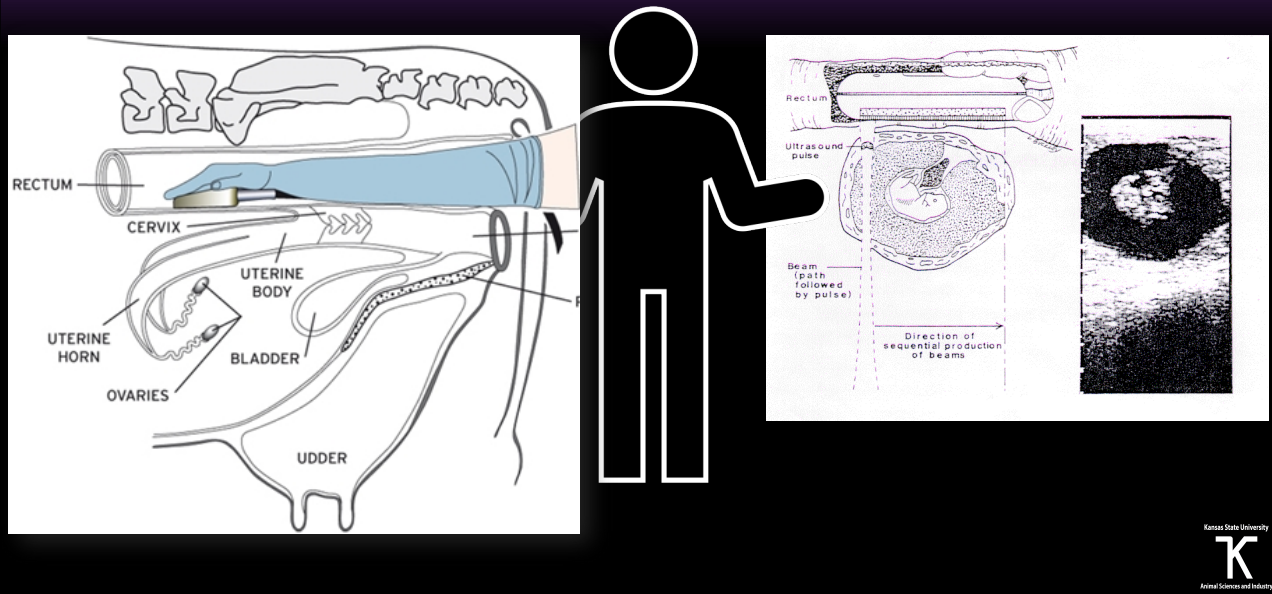
White on monitor = Dense (bone)

Gray on monitor = Semi-dense (soft tissue)



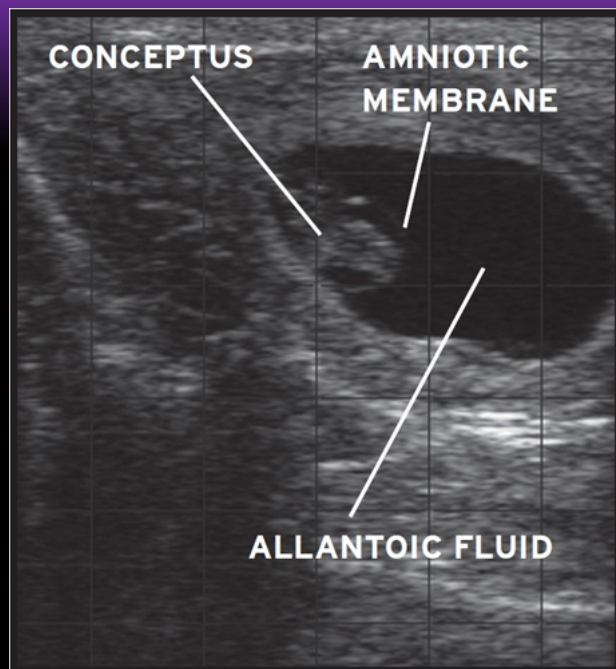
10

Ultrasonography for pregnancy determination in cattle



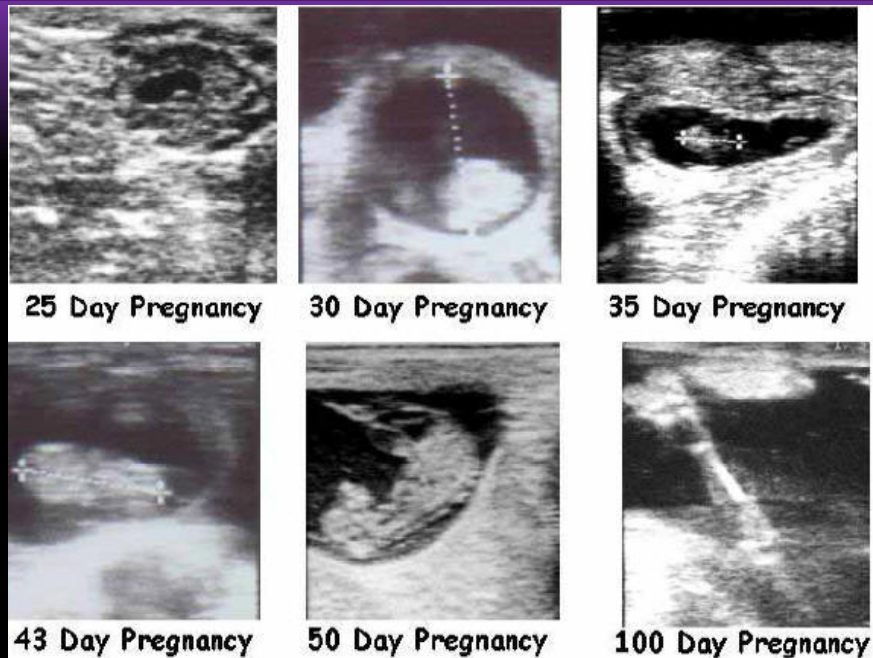
11

Ultrasonography of a bovine pregnancy (30 days of gestation)



12

Ultrasound images of the bovine conceptus



Curran, et. al., 1986; Lamb and Fricke, 2004

13

What did you learn today?

1. Poor fertility = poor efficiency
2. Cow body condition is important
3. Knowing when a cow will calve is helpful.
4. _____
5. _____

14

Beef Cattle Showmanship

Beef cattle, like other species require handling and training that starts at home. In order for you to have an animal that works properly in the show ring, you must put in many hours of hard work in order to maximize your animal's strong points and minimize the weaker points. Halter breaking, feeding, washing, clipping, and practicing showing are all things that should be completed at home, prior to going to any show.

A good showman is clean and well presented, aware of the judge and your surroundings, courteous at all times, pays attention, and knows how to properly set up your animal to show it's best physical attributes.

Showman's Attire

A showman should be neat and clean just as your animal should be well groomed. It is recommended that you wear appropriate clothing consisting of a tucked-in collared shirt, leather boots, jeans and a belt. Fancy and flashy clothing are not needed to look professional and can cause a distraction. A baseball cap has no place in the show ring.

In addition to being properly dressed, you should have the necessary equipment. A comb in your back pocket with the teeth turned to the inside as well as a show stick and show halter are necessary.

Show Time

- Check the show schedule and be ready when your class is called
- Lead the calf from the left side
- Your show stick should be in your left hand
- Don't coil the lead strap up around your hand or let drag
- Be aware of the judge and ring stewards
- Use the entire space provided
- Do not crowd other livestock

Setting Up Your Animal:

Always allow space between your calf and the calf next to you. Generally, you will set your animal up in a rear profile position after you walk into the ring. In order to set up in rear profile correctly, all feet should be set at all four corners under the animal. You will then lead your animal around the ring so the judge can view structural correctness and the side profile of your animal. A correct side profile position consists of the front feet set even while the back feet are staggered with the judge's side back foot being further back. Remember to stay calm while setting up and scratching your animal. Quick, rough movements show nervousness on your part and can make your animal uneasy.

Good sportsmanship is an important part of showmanship. Remember that you are always being watched and often judged by your actions. Work hard, practice before the show, always try to do better next time, gain from your mistakes and above all, always have fun!

Youth for the Quality Care of Animals (YQCA)

Youth for the Quality Care of Animals (YQCA) is a national, multi-species livestock quality assurance program available for youth ages 8-21. This annual educational and certification program focuses on food safety, animal well-being, and character awareness for youth producing and/or showing livestock. The species covered by the training are swine, beef cattle, dairy cattle, sheep, goats, market rabbits, and poultry. Extension specialists, the National Pork Board, national show organizers, and animal industry representatives were involved in designing the program with the intent to provide a national, standardized livestock quality assurance program applicable to multiple species. The curriculum is designed to provide different age-appropriate modules annually, so youth will expand their knowledge by learning about new topics every year. There are three options by which youth may obtain their YQCA certification; they may attend a 60-minute face-to-face training with a certified instructor, they may complete the age-appropriate online certification course, or youth who are ages 12 or 15 by January 1 may utilize the test-out option. There is a \$3/child fee for the instructor-led (face-to-face) training, while the online certification course is \$12/child. If a 12 or 15-year-old child passes the test-out exam, they will pay the fee the corresponds to multi-year certification in order to receive their certificate (\$36 or \$48). Families may log into the YQCA website and register for a training by selecting the 4HOnline option and using their 4HOnline credentials. There is also an option to create an independent account for FFA members.

As of 2019, all youth who plan to exhibit beef cattle, swine, sheep, and/or meat goats in the Kansas Junior Livestock Show or the Kansas State Fair Grand Drive are required to be YQCA certified in order to participate. Families will need to submit the completion certificate for each child to their Declaration Form at the time of nomination. Exhibitors will also need to enter this information during the online entry process for each show. Both shows will accept valid Youth PQA+ certifications until they expire.

Beginning in 2020, Kansas youth who are 7 years of age may become certified through the instructor-led course only. Families are encouraged to participate in the training and become familiar with the program, as 7-year-old KJLS exhibitors will be required to be certified beginning in 2021.

For more information about YQCA, please visit www.yqca.org, contact your local Extension Office, or the KSU Youth Livestock Coordinator, Lexie Hayes, at adhayes@ksu.edu or (785)532-1264.



A NEW OPTION FOR YOUTH LIVESTOCK EDUCATION

[SIGN UP OR LOG IN](#)

www.yqca.org

Notes:

KSU Youth Livestock Program

Website:

www.youthlivestock.ksu.edu

Facebook:

Kansas State Youth Livestock Program
@ksuylp

Snapchat:

K-State Youth Livestock Program
@ksuylp

Twitter

KSU Youth Livestock Program
@ksuylp

Instagram

KSU Youth Livestock Program
@ksuylp

Contact Information:

Kansas State University
Department of Animal Sciences and Industry
214 Weber Hall
1424 Claflin Road
Manhattan, KS 66506
P: (785)532-1264
F: (785)532-7059
adhayes@ksu.edu



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