Successes, Problems, and Opportunities: Data collection to improve carcass merit

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History

- Beginning in the 1960s, USDA offered a Carcass Data Collection Service using a USDA shield ear tag and unique number
- Tags were purchased for a nominal fee and when the carcasses were graded, the owner (or breed association) received the data
- This carcass data was instrumental in the early designed sire evaluation programs to create carcass merit EBVs and later EPD
- Data included hot carcass weight, ribeye area, fat thickness, KPH, lean and bone maturity, marbling score, and USDA Quality and Yield Grades
- Data return varied from 0 to 100% but averaged about 50%

Carcass Data Collection

- Breed associations standardize slaughter age from 12 to 24 months
- Weaned calves or yearlings are fed to their logical slaughter potential
  - Yearlings gain and grade better and less susceptible to getting sick
- Breeders have to be able to defer income and incur feeding expense
  - Shipping, processing, yardage, treatment, interest, and possibly deads
- Feeders have to understand that the owners want carcass data
  - Data collectors (university or plant) need to be notified in advance
  - Cattle need to be uniquely identified for data collectors for kill order
- Processing plant has to be "on board" with the process
  - Plants may offer to share camera data as well (or instead of)
- Data needs to be transcribed and sent to the owner or breed association quickly
- Works well if CG are large enough and genetic relationships exist

Carcass Data Collected

- Hot carcass weight

- Ribeye area

- Fat thickness

- KPH fat (est.)

- Lean maturity

- Bone maturity

- Marbling score

- Carcass blemishes

Advantages of Actual Carcass Data Collection

- Establish accurate kill order with animal ID (tags, brands, RFID)
- Record issues in harvesting – bruises, injection site or bruise trim, liver abscesses, lung scores, carcass weights, over 30 months, etc.
- Precise data collection, 10^{ths} an inch or square inch (FT, MS or maturity)
- Photograph (with plant permission) ribeyes or carcasses for client
- Collect data on other traits (hump height)
- Document carcass problems – blood splash, callous ribeye, advanced maturity, dark cutters, yellow fat, extreme trim
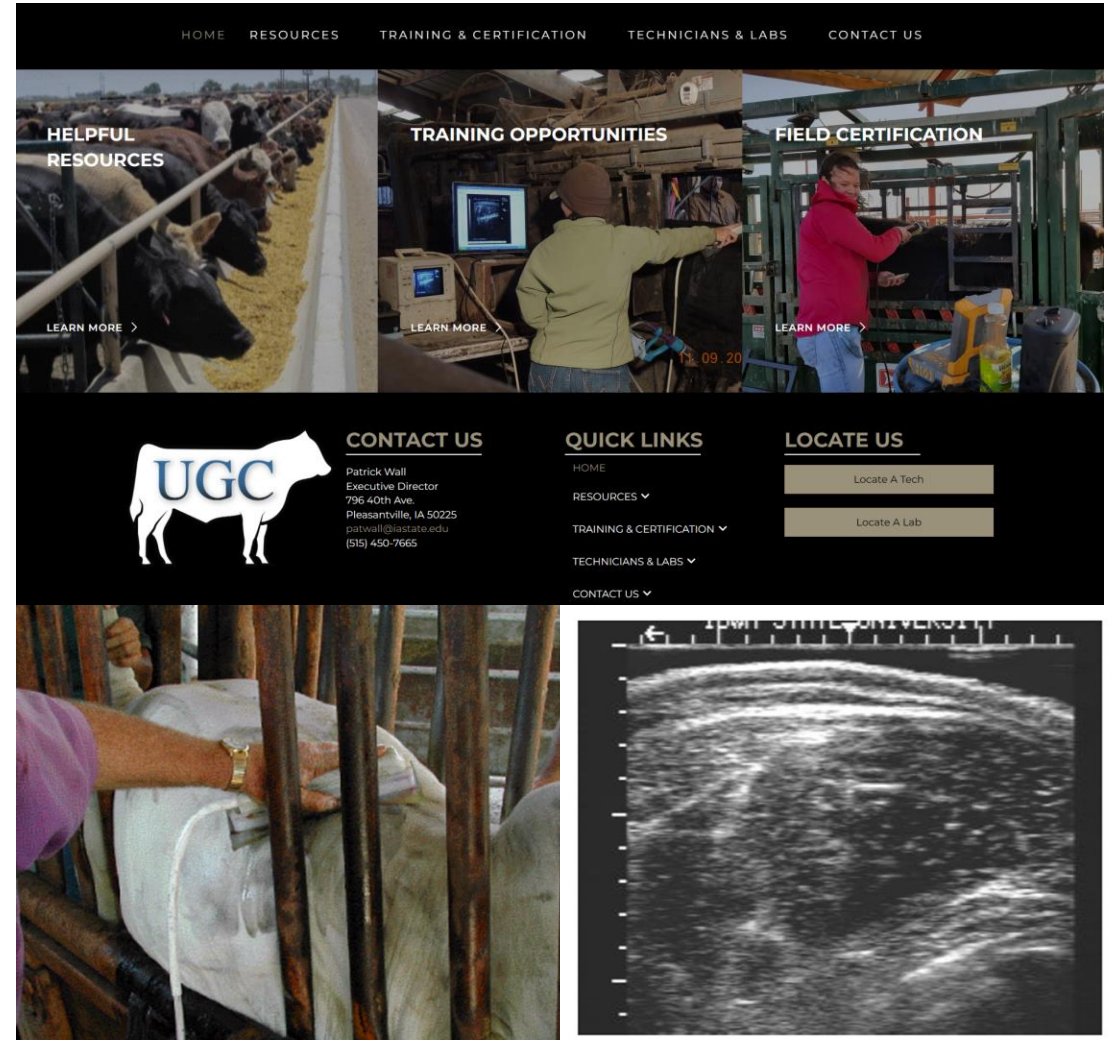- Collect samples for tenderness evaluation (WBSF) – w/ plant permission

Problems with Actual Carcass Data Collection

- Delayed income, added expense and risk
- Contemporary groups
- Few university of Extension feeding programs
- Need a feedyard that will feed small groups
- Variations in feeding programs
- Timely harvest
- Knowledge of marketing arrangement
- Access to beef processor to allow data collection
- Data submission by collector to owner (or breed association)

Ultrasound Carcass Merit

- Ultrasound of live animals for indicators of carcass merit is well established in practice
- Relatively inexpensive (compared to collection of actual carcass data)
- Ultrasound guidelines have been in place for many years in BIF and adopted by most breed associations
- Equipment for collecting and software for interpreting images are standardized
- As a tool for selection, it has a wider reception within the beef industry than EPD

Scan Results from Lab

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	4559		109/2	C			B4074	ADC0	4/22/24	4/22/24	0.5	0.33	10.2	05.15	0845	Y	
2	4559		111/2	C			B4074	ADC0	4/22/24	4/22/24	0.38	0.3	11.5	05.08	0840	Y	
3	4559		112/2	C			B4074	ADC0	4/22/24	4/22/24	0.41	0.44	08.5	07.90	0735	Y	
4	4559		114/2	C			B4074	ADC0	4/22/24	4/22/24	0.43	0.31	12	02.91	1020	Y	
5	4559		115/2	C			B4074	ADC0	4/22/24	4/22/24	0.52	0.26	08.9	05.66	0770	Y	
6	4559		116/2	C			B4074	ADC0	4/22/24	4/22/24	0.59	0.41	11	03.70	0885	Y	
7	4559		117/2	C			B4074	ADC0	4/22/24	4/22/24	0.39	0.28	10	04.16	0750	Y	
8	4559		118/2	C			B4074	ADC0	4/22/24	4/22/24	0.39	0.31	12.6	03.66	0960	Y	
9	4559		119/2	C			B4074	ADC0	4/22/24	4/22/24	0.5	0.36	10.8	05.96	0860	Y	
10	4559		120/2	C			B4074	ADC0	4/22/24	4/22/24	0.45	0.53	11.5	04.49	0880	Y	
11	4559		123/2	C			B4074	ADC0	4/22/24	4/22/24	0.52	0.33	09.1	05.65	0965	Y	
12	4559		124/2	C			B4074	ADC0	4/22/24	4/22/24	0.39	0.46	11.4	02.28	0930	Y	
13	4559		125/2	C			B4074	ADC0	4/22/24	4/22/24	0.4	0.36	10.4	05.93	0985	Y	
14	4559		126/2	C			B4074	ADC0	4/22/24	4/22/24	0.5	0.45	12.7	04.68	0880	Y	
15	4559		129/2	C			B4074	ADC0	4/22/24	4/22/24	0.45	0.27	10.8	03.16	0870	Y	
16	4559		130/2	C			B4074	ADC0	4/22/24	4/22/24	0.2	0.13	08.3	04.06	0705	Y	
17	4559		132/2	C			B4074	ADC0	4/22/24	4/22/24	0.31	0.14	10.1	02.72	0800	Y	
18	4559		134/2	C			B4074	ADC0	4/22/24	4/22/24	0.47	0.35	10	05.17	0825	Y	
19	4559		135/2	C			B4074	ADC0	4/22/24	4/22/24	0.5	0.47	10.5	06.14	0765	Y	
20	4559		136/2	C			B4074	ADC0	4/22/24	4/22/24	0.57	0.31	10.2	04.76	0790	Y	
21	4559		137/2	C			B4074	ADC0	4/22/24	4/22/24	0.27	0.1	10.5	03.61	0760	Y	
22	4559		138/2	C			B4074	ADC0	4/22/24	4/22/24	0.73	0.45	10.5	05.22	0875	Y	
23	4559		140/2	C			B4074	ADC0	4/22/24	4/22/24	0.45	0.34	09.3	03.69	0720	Y	
24	4559		141/2	C			B4074	ADC0	4/22/24	4/22/24	0.18	0.11	10.2	02.99	0735	Y	
25	4559		142/2	C			B4074	ADC0	4/22/24	4/22/24	0.47	0.33	08.7	04.32	0875	Y	
26	4559		143/2	C			B4074	ADC0	4/22/24	4/22/24	0.29	0.13	07.6	04.46	0525	Y	
27	4559		144/2	C			B4074	ADC0	4/22/24	4/22/24	0.3	0.22	10.4	04.20	0845	Y	
28	4559		145/2	C			B4074	ADC0	4/22/24	4/22/24	0.25	0.11	10.1	01.97	0705	Y	
29	4559		146/2	C			B4074	ADC0	4/22/24	4/22/24	0.36	0.22	09.4	01.40	0700	Y	

Uploading Scan Results

| Generate Barnsheet | To Lab | From Lab | Source Report |

Select the file to upload:

Master Herd: ajknowles   ajknowles YOU DID NOT ENTER A MEMBER ID FOR THIS UPLOAD

Data File: Choose File   no file selected

Data File Contents: Ultrasound

Ultrasound Lab: Cup Lab

Submit

please make sure the file is converted to a tab-delimited text (.txt) file with the data in the following column order:
Cup Lab data column order

1. Member/Premise ID
2. Herd Code
3. Tattoo/PHN
4. Sex
5. Birth Date
6. Registration#
7. Technician
8. Group Code
9. Scan Date
10. { n/a }
11. Rump Fat
12. Back Fat
13. Ribeye Area
14. % IMF
15. Weight
16. { n/a }
17. Scrotal Circ

Error Descriptors	Weaning Data	Reg No		Name	PHN	Sex	Date		Weight	REA	% IMF	Fat	Rump	Height	Scrotal	Premise/Pasture	CG	Mgmt	
	2022-04-30	1055242		MISS J&M FLAME 542/1	542/1	C	513 days old on	03/28/2023	1130	11.41	3.500	0.46	0.640			59188/Default Pasture	2	2	✕
	2022-04-30	1044901		MISS J&M CHRISTIE 527/1	527/1	C	515 days old on	03/28/2023	1115	12.72	3.190	0.28	0.700			59188/Default Pasture	2	2	✕
	2022-04-30	1044143		MISS J&M CAROLINA 526/1	526/1	C	515 days old on	03/28/2023	965	10.80	3.610	0.37	0.440			59188/Default Pasture	2	2	✕
	2022-04-30	1044634		MISS J&M CLARE 525/1	525/1	C	516 days old on	03/28/2023	1120	13.08	3.400	0.30	0.600			59188/Default Pasture	2	2	✕
	2022-04-30	1044635		MISS J&M YVONEE 524/1	524/1	C	516 days old on	03/28/2023	1080	13.86	4.410	0.46	0.550			59188/Default Pasture	2	2	✕
	2022-04-30	1044636		MISS J&M EILEEN 523/1	523/1	C	516 days old on	03/28/2023	1125	13.27	3.420	0.43	0.570			59188/Default Pasture	2	2	✕
	2022-04-30	1044628		MISS J&M LEILA 517/1	517/1	C	524 days old on	03/28/2023	1160	12.94	3.830	0.35	0.600			59188/Default Pasture	2	2	✕
	2022-04-30	1044632		MISS J&M DELILAH 520/1	520/1	C	519 days old on	03/28/2023	1220	11.95	3.210	0.28	0.640			59188/Default Pasture	2	2	✕
	2022-04-30	1044141		MISS J&M AILEEN 538/1	538/1	C	511 days old on	03/28/2023	1035	11.23	3.830	0.41	0.590			59188/Default Pasture	2	2	✕
	2022-04-30	1044140		MISS J&M CORDELIA 535/1	535/1	C	513 days old on	03/28/2023	955	8.35	3.550	0.35	0.600			59188/Default Pasture	2	2	✕
	2022-04-30	1044142		MISS J&M JOHANNA 541/1	541/1	C	505 days old on	03/28/2023	855	9.21	4.010	0.35	0.530			59188/Default Pasture	2	2	✕
	2022-04-30	1044637		MISS J&M JANET 531/1	531/1	C	514 days old on	03/28/2023	1170	13.95	3.530	0.36	0.660			59188/Default Pasture	2	2	✕

Challenges of Ultrasound Scans

- Lack of understanding of the requirements (age, CG) to collect scans for use in selection and EPD

- There is still confusion in breeder interpretation of IMF

- Timeliness of reporting from scanners to the labs for interpretation

- Chute side interpretation – standardized evaluation and nonreporting

- Similar issues of number of head and expense in scanning but much less so than in actual data collection

- Not actual carcass data – how can it be evaluated with it?
 - Need more carcass data from scanned animals

Carcass Cameras

- In plant, instrument grading was approved by USDA, REA and FT in 2007, and MS in 2013.

- Fast, accurate, do not require a 3rd party presence to collect data

- Does require a plant ID (kill order) to establish animal identity

- Most plants will share their data when included in the planning process

Remote Grading Pilot for Beef Program (2024)

- Two 8Mb digital photos of best REA and chine (for maturity) with carcass identification (including weight)

- Upload to a password protected web account for evaluation by AMS USDA grader

- Only FSIS or CIS inspected beef plants, 4 – 8 weeks

- Data returned to plant, 24 hours

- Not cheap (minimum $3000 initially, $114/hour for interpretation) LP_RGP_CostConsideration.pdf (usda.gov)
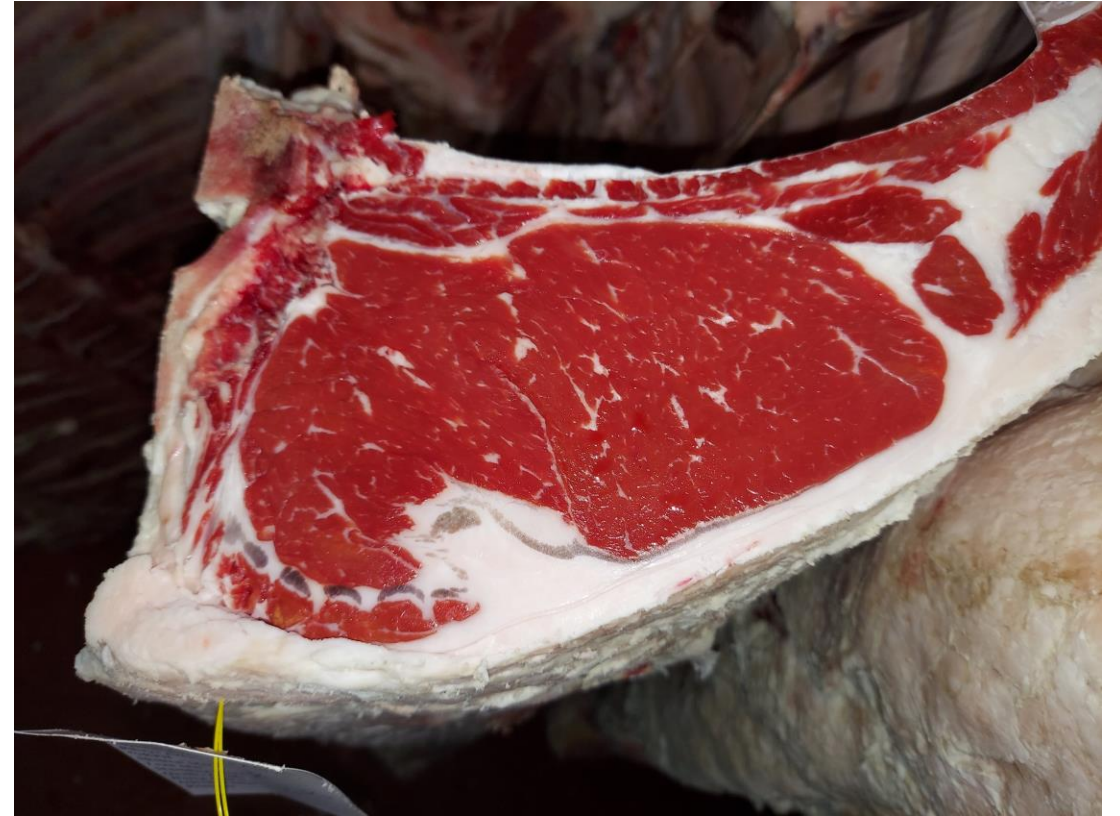
Carcass Data Collection

- All breeds should place some emphasis on carcass merit traits, especially to aid in removing undesirable outliers

- Actual carcass data is difficult and expensive to collect but is more accurate in the genetic sense

- Ultrasound carcass data is very economical to collect and very useful to select cattle for further evaluation as breeding animals or feeders

- Ultrasound data should be validated with carcass data in a breed

- Both can be used to increase selection response effectively and should be used concordantly