



Data collection and editing of feed intake in FutureBeefCross

Line Hjortø, Rasmus B. Stephansen, and Anders Fogh



Aim of the project

- **Why?**

Provide tools to improve the production of veal and beef through higher genetic levels for traits related to profitability and climate

- **How?**

Develop genomic breeding values for feed efficiency, methane emission, and eating quality

- We aim to measure genotypes and 3 novel phenotypes on 12,000 beef x dairy calves
- The calves have Holstein dams and Danish Blue, Charolais or Angus sires

Measurements of feed efficiency

- Feed intake per visit (All-feed by Allflex)
- Body weight
- 5 commercial herds
- Pelleted feed or total mixed ration
- 3 to 8 feed stations per pen
- 4 (PEL) and 8 (TMR) animals per feed station



All-feed feed station

- Each feed station contains among other things:
 - A load cell (scale)
 - A timer
 - An ear tag reader
 - Guarding of equipment
- The feed stations are connected to a computer that sends data to a data base
 - 3 to 8 feed stations per computer



First round of editing

- Identify and remove extreme observations
- Find out if extreme observations are associated with a calf or a feed station
- Add up feed intake per visit to daily feed intake
- QGG will prepare data to genetic analyses
- Casey et al. (J. Anim. Sci. 2005. 83:969-982)

Daily feed intake for FutureBeefCross calves – validated data

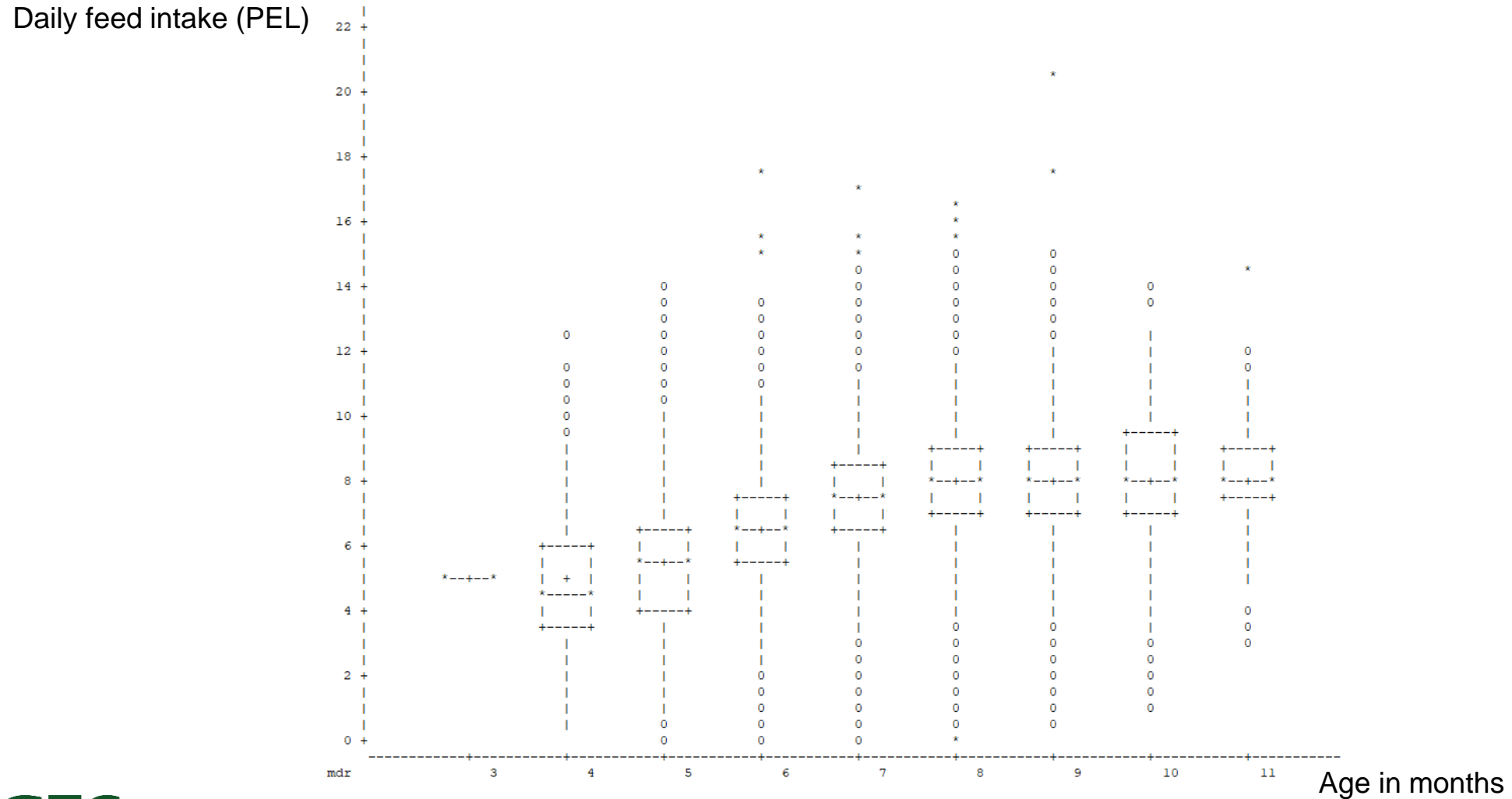
Trait	Mean	SD
Feed intake (PEL), kg.	7.4	2.0
Feed intake (TMR), kg.	14.6	3.6
Occupation time (PEL), min.	34	19
Occupation time (TMR), min.	71	31
Visits (PEL)	19	8
Visits (TMR)	30	11

Daily feed intake (PEL) when the calves are 32 or 33 weeks old within gender and breed – validated data

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Gender	Breed of sire	# observations	Mean, kg PEL	SD, kg PEL
Female	Angus	135	8.3	1.7
Male	Angus	285	8.3	1.8
Female	Danish Blue	4181	7.8	1.7
Male	Danish Blue	3906	7.6	1.7
Female	Charolais	89	7.0	2.1
Male	Charolais	100	8.0	1.4

Box plot of daily feed intake plotted against age in months



Number of calves undergoing tests from January 2020 to April 2021 – validated data

Calves	Calves	Test days/calf	Min. days	Max. days
All calves	3949	21	1	113
FBC calves*	2064	24	1	113

- FBC calves have Holstein dams and Danish Blue, Charolais or Angus sires
- Today, the test capacity is approximately 5000 calves per year
- On the basis of insemination data, we assume that 3 out of 5 herds receive more FBC calves than their test capacity in 2022
- This makes it possible to choose between calves

Final data set - all variables are within the criteria of editing

Criteria of editing	Visits	Animals	Days (mean)
Start data set	1,963,168	3123	1 - 132 (30)
Pairwise observations	1,962,292	3123	1 - 132 (30)
Less than 24 hours	1,821,147	3000	1 - 128 (28)
Feed stations are out of order	1,718,178	2978	1 - 128 (27)
No ID	1,691,386	2978	1 - 128 (27)
Thresholds	1,269,548	2972	1 - 113 (20)