Genetic Parameters for Beef Carcass Cuts Yield in Ireland

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Introduction: Yield & Value?

- Different € value cuts in a carcass

  Sirloin = €€€€ Shoulder = €€

- Using dissections results

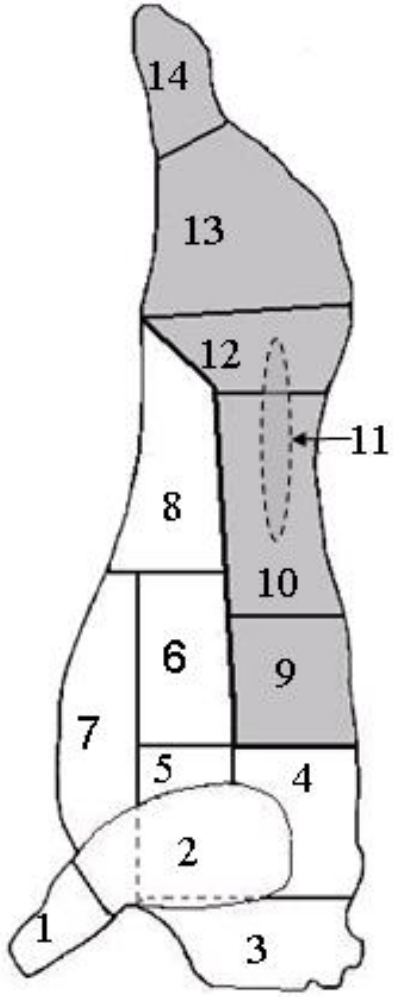
  ➔ genetic analysis to detect possible benefits for beef farmers

Two Raw Datafiles

- Commercial data
  - From an Irish supermarket
  - 11 000 animals
    - *slaughtered from 1996 to 2005*
    - *1 carcass => up to 16 different cuts*
- Experimental data
  - From Teagasc beef research center
  - 500 animals
    - *slaughtered from 2000 to 2008*
    - *1 carcass => 23 different cuts*

The Different Cuts

- Higher & Lower value cuts
  - Graph based on the experimental dissections



Forequarter

1. Front shin
2. Shoulder
3. Neck
4. Chuck
5. Ribs 1 to 5
6. Ribs 6 to 13
7. Brisket
8. Flank

Hindquarter

9. Rib Roast
10. Strip-loin
11. Fillet (inside)
12. Sirloin
13. Round
14. Back shin

The Models

	Commercial	Experimental
Model	Animal	Animal
Pedigree (breed grp)	6 250 (6)	8 300 (7)
Fixed effects (levels)	Sex (3) C. Groups (83)	Dam age (4) C Groups (11)
Covariates	Slaughter age Sex x Slaug. age	Heterosis Slaughter age Sex x Slaug. age
Packages	SAS DMU ASREML	SAS ASREML

Results: Heritability

	Commercial		Experimental	
	N	h^2 *(s.e.)*	N	h^2 *(s.e.)*
Carc. Weight (kg)	635	0.59 *(0.200)*	373	0.42 *(0.216)*
Carc. Conf. (1-15)	345	0.78 *(0.265)*	373	0.44 *(0.224)*
Carc. Fat (1-15)	345	0.63 *(0.264)*	373	0.31 *(0.189)*
Shoulder (kg	635	0.61 *(0.195)*	373	0.75 *(0.238)*
Strip-loin (kg)	523	0.41 *(0.217)*	373	0.45 *(0.231)*
Sirloin (kg)	635	0.55 *(0.199)*	373	0.61 *(0.227)*
Round (kg)	635	0.42 *(0.293)*	373	0.84 *(0.247)*
Fillet (kg)	520	0.62 *(0.204)*	373	0.32 *(0.214)*

Results: Correlations

- Experimental dataset

Correlation
≤ 0.0
>0.0 & ≤ 0.2
>0.2 & ≤ 0.5
>0.5 & ≤ 0.7
> 0.7

Genetic / Phenotypic	C. Weight	C. Conf.	C. Fat	Shoul-der	Strip-loin	Sirloin	Round	Fillet
C. Weight								
C. Conf.								
C. Fat								
Shoulder								
Strip-loin								
Sirloin								
Round								
Fillet								

Conclusions

- Genetic parameters
  - Moderate to high heritability & correlations
  - Stronger estimates in the hindquarter *vs* the forequarter
- EUROP grading for conformation *vs* genetic potential of cuts : room for improvements
- Selection for carcass weight will increase high value cuts weight

What's next?

- Use of digital images
  - VBS2000 (E+V, Germany)
  - 2 pictures / carcass
  - Around 90 variables calculated to produce the EUROP grading for conformation & fat.

What's next?

- Creation of prediction equations
  - *Images variables* → *main cut yields*
  - *Genetic analysis of the predicted yields*
- First steps
  - +5 million images stored since 2004
    - *+ 1 million animals match the ICBF database*
      - *+ 600 000 animals with known sire.*

Thank you.