NATIONAL CATTLE EVALUATION FOR FEED INTAKE AND EFFICIENCY

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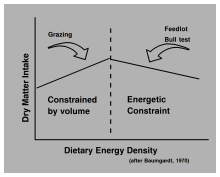
Economically Relevant Trait

- *Feed intake*
  - *Feedlot*
    - Inference from seedstock evaluation to commercial performance
    - Relatively straightforward valuation
  - *Cow-calf*
    - Limited information
    - Difficult (infeasible) to measure
    - More challenging valuation



Test Design
Postweaning Feed Intake

- *Commercial progeny*
  - Direct desired inference
  - Challenging implementation
  - Controlled sampling
- *Seedstock candidate*
  - Depends on genetic correlation
  - Introduce selection bias
  - More straightforward implementation
  - Represents current selection candidates

Test Design
Postweaning Feed Intake

- *Different rations*
  - Variation in characterization
  - Potential for heterogeneous variance
- *Pre-adjustment*
  - Inconsistent trait definition
  - Opportunity to introduce bias

Quality Control
Postweaning Feed Intake

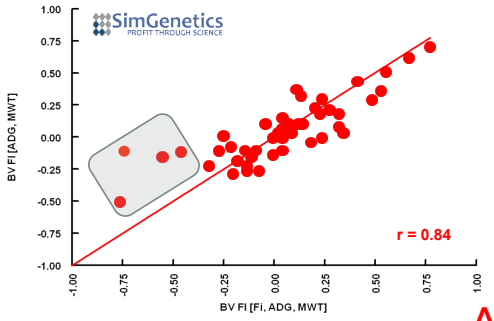
- *Phenotypic data collection*
  - Basis in scientific literature
  - BIF Guidelines
- *Contemporary groups*
  - Include preweaning environment ?
  - Number of animals
- *Automation*

Prototype National Cattle Evaluation
Postweaning Feed Intake

- *Standardize (= 0, s = 1) feed intake measure within contemporary group*
  - Stabilize variance of feed intake
    - Different unit of reporting (As fed, DM, TDN, ME)
    - Different rations
    - Different environments

Prototype National Cattle Evaluation
Postweaning Feed Intake

- *Indicator traits*
  - Overcome selection bias
  - Increase accuracy
  - Incorporate genomic prediction
  - Increase number of animals evaluated
  - Facilitate presenting results



Example: National Cattle Evaluation

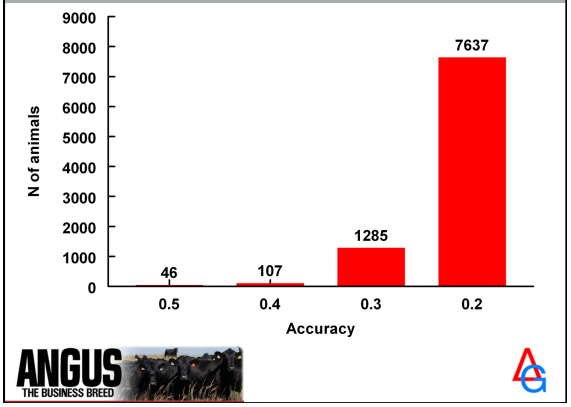
- *Component traits*
  - Feed Intake
  - Weaning weight
  - Post-weaning gain
  - Fat depth
- *Multiple trait BLUP*

Genetic Evaluation

ANGUS THE BUSINESS BREED

- 45,121 EPD *for feed intake*

	Accuracy	N
Pedigree estimate	0.08	
Weaning weight (WW)	0.13	9,874
WW + gain	0.17	1,523
WW + gain + fat depth	0.19	2,838
Complete record	0.29	2,039
Weaning weight + feed intake	0.24	1,089



Prototype - National Cattle Evaluation
Post-weaning Feed Intake

- *Trait expression – EBV Feed Intake*
  - *z-score, directly*
  - *percentile of normal distribution*
  - *transform to inferential ration*
    - *pseudo-standard ration for NCE*
    - *specific ration for custom application*

Post - National Cattle Evaluation
Multiple trait evaluations

- *Biological indexes*
  - *Genetic* residual gain, or
  - *Genetic* residual feed intake
- *Economic indexes*
  - Breeding objectives
  - Selection index

Post - National Cattle Evaluation
Indexes

- *Biological*
  - *Genetic* Residual Feed Intake

Post - National Cattle Evaluation
Post-weaning Feed Intake

- *Biological*
  - *Genetic* residual gain

Post - National Cattle Evaluation
Post-weaning Feed Intake

- *Economic (requires consistency of units)*
  - *Breeding objective*
  - *Selection index*

National Cattle Evaluation Summary

- *Component traits*
  - Feed Intake
  - Weaning weight
  - Post-weaning gain
  - Fat depth
  - Genomic prediction(s)
- *Multiple trait BLUP*
- *Post-BLUP Indexes*

Possibly alternatives

When proven valuable

Options available