Management traits

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ICBF Dairy Industry Consultation Meeting, October 2012
Management traits

- Milking speed
- Temperament
- Farmer satisfaction, farmer opinion, workability, likeability
Labour study (Yvette de Hass)

• Discussions with two discussion groups on characteristics of the easy-care cow
  • Milking process
    • Temperament, milking speed, lazy cows, mastitis, udder conformation
  • Cow health
    • Metabolic diseases, lameness, mastitis, BCS recovery
  • Calving and calf care
    • Calving difficulty, calf vitality
  • Fertility
    • Repeat breeders, silent heats
Relative importance

• 592 returned questionnaires from 4,000 surveyed farmers
Data

- DIY milk meters
- Average milk yield recorded every 5 seconds
  - Milking duration
  - Flow rates (max., average)
- 370,597 records from 121,335 lactations on 1,365 farms during the year 2012
- DEP data for temperament
Objective

• To develop a new management sub-index for inclusion in the EBI

• Goal traits:
  • Milking speed – DIY meters
  • Temperament – DEP scheme
Milking speed

1. Ensure not selecting for lower yielding animals
   • Milking speed genetically independent of milk yield

2. Ensure not selecting for more mastitis through weaker teat end sphincter muscle
   • Include SCC and mastitis in EBI and monitor response to selection
   • Derive trait independent of both milk yield and SCC
Milking duration

The Irish Agriculture and Food Development Authority
Residual milking duration – effect of milk yield removed

Residual duration after adjustment for yield (seconds)

Proportion
**Approach**

- Calculate milking duration from DIY meters
- Adjust genetically for milk yield and somatic cell count
  - Ensures selection for this trait will have zero impact on genetic change for either milk yield or somatic cell count
- Include in a multi-trait evaluation with temperament
- Investigate potential of type traits as predictor traits
Genetic variation

Residual milking duration

-100 -50 0 50 100

72 seconds

>12 hrs per lactation!

5%

Residual milking duration

The Irish Agriculture and Food Development Authority
Genetics of residual milking duration

- Heritability: 0.18
- Zero genetic correlation with milk yield and somatic cell count
  - Genetic correlation of 0.14 with mastitis
- Genetic correlations with udder type traits: -0.11 to 0.07 (exception of teat length 0.29)
## Genetic correlations with residual milking duration

<table>
<thead>
<tr>
<th>Trait</th>
<th>Ease of milking</th>
<th>Farmer temp.</th>
<th>Linear temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milking duration</td>
<td>-0.28</td>
<td>0.25</td>
<td>0.22</td>
</tr>
<tr>
<td>RMD</td>
<td>-0.51</td>
<td>0.41</td>
<td>-0.12</td>
</tr>
</tbody>
</table>
Genetics of temperament

- Heritability: 0.13

- Positive genetic correlation with somatic cell count (0.34) but not mastitis or lameness and negative genetic correlation with milk yield (-0.21)
Management genetic evaluations

- Multi-trait repeatability animal model
  Milking duration, milk yield, somatic cell score, farmer scored temperament, linear classified temperament & ease of milking

- Post-hoc genetic adjustment of milking duration for both milk yield and somatic cell score

- Goal traits:
  - Residual milking duration
  - Temperament
DIY meters

35% of cows

192,258 cows
Economic values - milking duration

- Assumption based on shortening the duration of milking of the entire herd
  - 305 days of lactation, milked twice daily
  - 12 unit milking parlour with 100 cows
    - Number of cows per unit is the important factor: 8.33
  - Discounted genetic expression of 1
- Impact on survival, milk yield, SCC ...
- Economic weight = -€0.25/second
Economic values - temperament

- Based on analysis of beef docility (Peter Amer)
- Cost of injury
  - 65% of the estimated 1731 farm injuries in 2007 were livestock related
  - Doctor charges & work days lost
  - Average cost of injury: €7030
- Death
  - 27 deaths between 1996 and 2007 resulting from livestock
Economic values – temperament

- Calculations include both cows and heifers
  - Assumed unity genetic correlation between cow and heifer docility
  - Accounts for cumulative discounted genetic expressions
- Impact on survival ...
- Economic weight: -€33.69
Relative emphasis in EBI

- EBI of 2012
- Milking duration – 2.20%
- Temperament – 2.05%
- Total: 4.25%
Health traits

Donagh Berry\textsuperscript{1} John MacCarthy\textsuperscript{2} and Andrew Cromie\textsuperscript{2}

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ICBF Dairy Industry Consultation Meeting, October 2012
Health traits in EBI

• Mastitis
  • Economic value applied to somatic cell count through assumed genetic correlation ($r_g=0.70$)

• Somatic cell score

• Lameness
  • Economic value applied to linear type trait locomotion through assumed genetic correlation ($r_g=-0.40$)

• Application of economic value to correlated trait deflates weight within EBI
Dairy Efficiency Program (DEP)

- Year 1:
  - Calving events recorded (Animal Events)
- Year 2:
  - Calving events + health events (on a per lactation basis) recorded
  - Mastitis (cases during lactation: 0, 1, ≥2)
  - Lameness (cases during lactation: 0, 1, ≥2)
  - Cow temperament (VG, G, A, P, VP)
### DEP Health Notification Form

**Herd owner:** JOHN SMITH  
**Herd no:** IE1234567  
**Print date:** 15-Sep-2011

Listed below are cows currently in your herd or cows which calved since 01-Jan-2011:

<table>
<thead>
<tr>
<th>Cow Jumbo</th>
<th>Tag Number</th>
<th>Last Calving Date</th>
<th>Lact. No.</th>
<th>Milking Temperament Score</th>
<th>Mastitis</th>
<th>Lameness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>VG</strong> Very Good</td>
<td>1 2</td>
<td>1 2</td>
</tr>
<tr>
<td>2-1</td>
<td>IE123456790182</td>
<td>17/02/2011</td>
<td>9</td>
<td>G = Good</td>
<td>1 2</td>
<td>1 2</td>
</tr>
<tr>
<td>6-1</td>
<td>IE123456750162</td>
<td>10/04/2011</td>
<td>8</td>
<td>A = Average</td>
<td>1 2</td>
<td>1 2</td>
</tr>
<tr>
<td>9-1</td>
<td>IE123456770180</td>
<td>10/05/2010</td>
<td>7</td>
<td>P = Poor</td>
<td>1 2</td>
<td>1 2</td>
</tr>
<tr>
<td>255</td>
<td>IE123456770255</td>
<td>16/01/2011</td>
<td>7</td>
<td>VP = Very Poor</td>
<td>1 2</td>
<td>1 2</td>
</tr>
<tr>
<td>256</td>
<td>IE123456780256</td>
<td>22/04/2011</td>
<td>7</td>
<td></td>
<td>1 2</td>
<td>1 2</td>
</tr>
<tr>
<td>259</td>
<td>IE123456720259</td>
<td>10/02/2011</td>
<td>6</td>
<td></td>
<td>1 2</td>
<td>1 2</td>
</tr>
<tr>
<td>265</td>
<td>IE123456790265</td>
<td>20/03/2011</td>
<td>6</td>
<td></td>
<td>1 2</td>
<td>1 2</td>
</tr>
<tr>
<td>275</td>
<td>IE123456720275</td>
<td>12/05/2011</td>
<td>7</td>
<td></td>
<td>1 2</td>
<td>1 2</td>
</tr>
</tbody>
</table>
Approach

• DEP mastitis and lameness data supplemented with recorded mastitis and lameness data
• "Other" recorded diseases
• Milk yield and somatic cell count
• Linear type traits
Genetics

- **Heritability**
  - Mastitis: 0.02
  - Lameness: 0.04
  - Other diseases: 0.01

- **Genetic correlations:**
  - Mastitis & lameness: 0.69
  - Mastitis & SCC (0.73) & milk yield (0.23)
  - Lameness & SCC (0.20) & milk yield (0.15)
  - Mastitis & udder-type traits: up to 0.34
  - Lameness & legs-type traits: up to 0.08
Genetic evaluations

- Multi-trait repeatability animal model
- Mastitis, lameness, somatic cell count, milk yield, udder depth, teat length, locomotion
- Goal traits:
  - Mastitis (DEP+recorded)
  - Lameness (DEP+recorded)
Economic values

• Apply economic values directly to the trait and not correlated traits
Economic values - mastitis

- Costs: labour, milk withdrawal, treatment
- Incidence of 25% of which 10% of them require veterinary assistance
- Impacting of shifting underlying liability distribution
- Economic value: -€77.10
- Economic value SCC: -€43.49
- Weighting on udder health: 2.8%
Economic values - lameness

- Costs: labour, milk withdrawal, treatment
- Incidence of 12% require mixture of farm-relief and farmer: €30.22
- Incidence of 3% require vet: €112.58
- Shift the underlying liability distribution
- Economic value -€54.26
  - Doubling of weight in EBI: 0.6%
  - Why so low?
Summary

• Improved genetic evaluation for health
• Increased emphasis within EBI
• Low apparent emphasis because of avoidance of double-counting
  • Bulls with lame/mastitic daughters will yield less and have inferior fertility which will be picked up in the PTAs for milk and fertility
• Still one of the weakest components within the EBI
Future health index

- Mastitis
- Somatic cell score
- Lameness
- TB, BVD, Johnes
- Factory reported ailments
- Reproductive tract ultrasound
- Others
EBI further developments

- Laurence Shalloo
- Combination of farm systems model and milk processor model
Linear type traits update

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ICBF Dairy Industry Consultation Meeting, October 2012

The Irish Agriculture and Food Development Authority
INTERBULL test-run

- Submitted and passed INTERBULL test-run
- Revised data edits
- Revised statistical model
- Revised genetic parameters
- Revised genetic base

- UK and IRL base are no longer comparable
ICBF Industry Meeting. Dairy

31st October 2012
Dairy Only (10–12)

• Genetic evaluations for health and management traits.
• Economic values for health and management traits.
• ICBF Active Bull List.
• G€N€ IR€LAND Breeding Program.
• EBI Survey
Genetic Evaluations for Health & Management Traits.

- Slides from Donagh.
Economic Values for Health & Management Traits.

• Slides from Donagh.
ICBF Active Bull List.

• Claims by certain AI companies re: “top bulls”.
• Has caused some “angst and confusion”.
• ICBF response – to identify “top bulls” associated with defined categories of animals.
Top Bulls – Defined Categories.

• Three categories defined (so far).
  – 1. Number 1 'GS' Dairy AI Bull
  – 2. Number 1 'DP–IRL' Dairy AI Bull
  – 3. Number 1 'DP–INT' Dairy AI Bull

• Reference relevant Active Bull List.
  – For example; LHZ, number 1 GS dairy AI bull, ICBF Active Bull List Autumn 2012.

• Further suggestions, contact Pat.
GENE IRELAND Dairy Breeding Program

• Meetings with stakeholders underway.
  – AI companies, bull breeders & users.
  – Establish feedback ahead of “roll-out” for 2013 program.

• ICBF provide framework for “overall” program, but also facilitates individual requirements.
Gene Ireland – Issues/Updates.

- Promoting genetic diversity.
  - Current level of relatedness.
- Next Generation Dairy Herd.
  - 120 high EBI, genetically diverse heifers assembled.
- Sexed semen research project.
  - Sexed male semen for program?
  - Major field/research trial being developed.
EBI Survey (Jan 2013).

- Is EBI moving in right direction?
  - Milk kg in post quota environment.
  - Health and management traits.
  - Functional type for expansion.....

- Survey of farmers & industry.
  - Email survey – similar approach to “labour” survey.

- Establish views and then decide on course of action.
Dairy & Beef (12–1 PM)

• Calving evaluations.
• Beef performance evaluations.
• DNA archive.
• Genomics conference.
Calving evaluation review
Changes

• New genetic parameters
• Adjusting for contemporary groups
• Splitting of contemporary groups for 1st vs later calvers
• Inclusion of predictor traits
  – Birth wts, liveweights, linears, carcass
• Integration of foreign proofs
## Genetic parameters

<table>
<thead>
<tr>
<th>Trait</th>
<th>Old parameters</th>
<th>New parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>heritability</td>
<td>Genetic correlation</td>
</tr>
<tr>
<td>Calving difficulty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct</td>
<td>0.23</td>
<td>-0.72</td>
</tr>
<tr>
<td>Maternal</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>Direct</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Maternal</td>
<td>NA</td>
<td>0.01</td>
</tr>
<tr>
<td>Gestation</td>
<td></td>
<td>0.39</td>
</tr>
<tr>
<td>Direct</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>Maternal</td>
<td>NA</td>
<td>0.04</td>
</tr>
</tbody>
</table>

- An individual calving record will have less of an effect on an animal’s proof
- Will need double the number of records to reach the same reliability as current evaluation for direct calving difficulty.\(^{13}\)
Contemporary groups

- Currently treated as “Fixed Effects” in the evaluation
  - An historical statistical method since EBVs were first introduced
  - Not ideal in some situations
    - Contemporary group effect in small herd sizes cannot be estimated properly
    - Hence a restriction of a minimum of 5 animals per contemporary group over a 6 month period in Irish evaluations
    - This rules out information from many small herds

Alternative:

- Treat contemporary groups as random effects
- Need to estimate the spread in order to use in evaluations
- Done in Scandinavian dairy evaluations and Czech beef evaluations
1st versus later calvers

Two options here:

1. Treat as a different trait
   - Two sets of ebvs and reliabilities
   - What trait is published? Both?
   - Problems with differing use of bulls

2. Same trait but different contemporary groups for heifers versus cows within the same herd
   - One ebv and one reliability

For the moment opt for option 2 but in time explore option 1 more
Inclusion of predictor traits

Are there other traits available which can help to improve the accuracy of genetic merit for calving difficulty? Why?

• (A) No variation in calving scores due to management, age profile of cows
• (B) Under-reporting of calving difficulty
  • But how do you separate A from B? Not possible
## 2011 Calving score recording patterns

<table>
<thead>
<tr>
<th>Spread in scores</th>
<th>Commercial Beef herds</th>
<th>Pedigree beef herds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Herds</td>
<td>% of herds</td>
</tr>
<tr>
<td>1 - - -</td>
<td>19,271</td>
<td>46.6%</td>
</tr>
<tr>
<td>1 2 - -</td>
<td>11,252</td>
<td>27.2%</td>
</tr>
<tr>
<td>1 2 3 -</td>
<td>3,891</td>
<td>9.4%</td>
</tr>
<tr>
<td>- 2 - -</td>
<td>794</td>
<td>1.9%</td>
</tr>
<tr>
<td>1 2 - 4</td>
<td>1,827</td>
<td>4.4%</td>
</tr>
<tr>
<td>1 2 3 4</td>
<td>1,507</td>
<td>3.6%</td>
</tr>
<tr>
<td>1 - 3 -</td>
<td>873</td>
<td>2.1%</td>
</tr>
<tr>
<td>1 - - 4</td>
<td>989</td>
<td>2.4%</td>
</tr>
<tr>
<td>- 2 3 -</td>
<td>402</td>
<td>1.0%</td>
</tr>
<tr>
<td>-- - 3 -</td>
<td>155</td>
<td>0.4%</td>
</tr>
<tr>
<td>-- - - 4</td>
<td>82</td>
<td>0.2%</td>
</tr>
<tr>
<td>1 - 3 4</td>
<td>169</td>
<td>0.4%</td>
</tr>
<tr>
<td>- 2 3 4</td>
<td>94</td>
<td>0.2%</td>
</tr>
<tr>
<td>- 2 - 4</td>
<td>45</td>
<td>0.1%</td>
</tr>
<tr>
<td>-- - 3 4</td>
<td>28</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
Inclusion of predictor traits

<table>
<thead>
<tr>
<th>Trait</th>
<th>heritability</th>
<th>gen correlation with calving difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality at birth</td>
<td>0.04</td>
<td>0.12</td>
</tr>
<tr>
<td>Mortality 5 to 28 days</td>
<td>0.04</td>
<td>0.08</td>
</tr>
<tr>
<td>Gestation</td>
<td>0.36</td>
<td>0.25</td>
</tr>
<tr>
<td>Birth weight</td>
<td>0.46</td>
<td>0.37</td>
</tr>
<tr>
<td>150-250 day wt</td>
<td>0.30</td>
<td>0.26</td>
</tr>
<tr>
<td>250-350 day wt</td>
<td>0.35</td>
<td>0.20</td>
</tr>
<tr>
<td>350-450 day wt</td>
<td>0.43</td>
<td>0.17</td>
</tr>
<tr>
<td>Muscle</td>
<td>0.40</td>
<td>0.25</td>
</tr>
<tr>
<td>Skeletal</td>
<td>0.40</td>
<td>0.25</td>
</tr>
<tr>
<td>Carcass wt</td>
<td>0.38</td>
<td>0.25</td>
</tr>
<tr>
<td>conformation</td>
<td>0.33</td>
<td>0.20</td>
</tr>
</tbody>
</table>

As expected the best predictor of calving difficulty is Birth weight, But in the absence of birth weight the correlations with later traits will be more important!
Integration of foreign proofs

Currently foreign proofs are integrated post evaluation

- INTERBULL (dairy)
- Breed x country (beef)

- Aim with the new evaluations to
  Integrate proofs directly into the evaluation similar to beef
  - Benefit: Foreign proof should then flow down and up the pedigree
Current status

• EBV and reliabilities ran on a small dataset last week
  - 3 goal traits (direct and maternal)
    • calving difficulty, gestation, mortality at birth
    • 8 predictor traits: liveweight, linears, carcass

• Currently generating evaluation file of all animals
  - Hopefully will run ok
Current status

- New ebvs and reliabilities
- Apply same base as before
- Compare proofs with current proofs
- Release test proofs end of next week
- Feedback and decision on implementation and if positive
- Run a new evaluation with up-to-date calving and beef data for release in December/January
Beef Performance evaluation Review
Changes

• New genetic parameters
• New traits
• Adjusting for contemporary groups
• Change to the way the contemporary groups are formed for:
  – linear scored traits
  – Carcass traits
<table>
<thead>
<tr>
<th>Category</th>
<th>Traits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight traits</td>
<td>150-300 day weight, 300-600 day weight</td>
</tr>
<tr>
<td>Commercial weaning quality traits</td>
<td>Calf quality score, 150-300 mart price</td>
</tr>
<tr>
<td>Pedigree weaning quality traits</td>
<td>Width at withers, Width behind withers, Loin Development, Development of Hind Quarter, Height at withers, Length of back, Length of pelvis</td>
</tr>
<tr>
<td>Performance station traits</td>
<td>Feed intake, Ultrasound Muscle</td>
</tr>
<tr>
<td>Carcass traits</td>
<td>Carcass weight, Carcass conformation, Carcass fat</td>
</tr>
<tr>
<td>Carcass traits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cull cow carcass weight</td>
</tr>
<tr>
<td>Foreign trait eBVs</td>
<td>Foreign EBV weaning wt, Foreign EBV Muscle, Foreign EBV Skeletal</td>
</tr>
</tbody>
</table>
Contemporary group changes

• Linear scoring:
  – No longer permit crossbreds and purebreds in same group
  – Split Age groups 150–250 and 250–350 day
  – Increasing the age limit for linear scoring?

• Carcass data
  – Currently all animals from a herd over a 2 month period are included in same contemporary group and adjusted for sex
  – New evaluation will break these up into heifers, steers and young bulls
  – Effect of herd prior to fattening
Current status

● Genetic parameter estimation should finish this week

● Formatting for a test run in Mix99
  – EBVs & reliabilities
  – Test run and circulation of proofs
  – Second week in November hopefully
DNA Archive.

Genomics Conference.

- ICBF & Teagasc.
- Wednesday 14 November, Killelshin Hotel, Portlaoise.
- For industry & bull breeders.
  - Parentage verification, genomic evaluations & breeding programs.
  - Dairy & beef.
- Complimentary. Must pre-book.
Session 1 (Morning)

- Genomics, parentage identification & genetic evaluations.
  - Introduction to animal breeding, including genomics – Dr. Sinead McParland, Teagasc.
  - Genomics and parentage verification – Dr. Matt McClure, US Department of Agriculture.
  - Developing a customised chip for Ireland – Dr. Mike Mullen, Teagasc.
  - DNA archive – Pat Donnellan, ICBF.
  - Implementation of genomic services – Mary McCarthy, ICBF & John Flynn, Weatherby’s.
Session 2 (Afternoon)

- Genomics and genetic improvement.
  - Role of genomics in Irish dairy and beef breeding programs – Dr. Andrew Cromie, ICBF.
  - Developments in beef genomics – Dr. Donagh Berry, Teagasc
  - Developments in dairy genomics – Dr. Francis Kearney, ICBF
  - Where next for genomics and cattle breeding – Dr. Matt McClure, US Department of Agriculture.
Beef Only (2–4 PM).

- Stock bull functionality.
- €uro-Star implementation.
- ICBF Active Beef Bull Lists.
- G€N€ IR€LAND Maternal Beef Program.
STOCK BULL
FUNCTIONALITY ANALYSIS

Fiona Hely, Peter Amer, Tim Byrne, Andrew Cromie, Ross Evans, John McCarthy, Francis Kearney
Analysis of data

- Need to define what a “stock bull” is
- 16GB of data needs to be filtered and merged to find these stock bulls and their movements and progeny during their service life
- Determine how many progeny each stock bull has in each herd year of their service life
Stock bull categories

1. Full pedigree status stock bull
2. Grade bull with no evidence of mixed breed background
3. Grade bull with evidence of mixed breed background
## Number of bulls by category

<table>
<thead>
<tr>
<th>Bull category</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Full pedigree status bulls</td>
<td>3,522</td>
</tr>
<tr>
<td>2 Grade bull with no evidence of mixed breed background</td>
<td>970</td>
</tr>
<tr>
<td>3 Grade bull with evidence of mixed breed background</td>
<td>2,319</td>
</tr>
</tbody>
</table>
Around 50% of the bulls were full status pedigree bulls which produced 74% of the stock bull progeny.
Measures of stock bull performance

- Comparisons of service length can only be made between stock bulls that are already dead otherwise stock bulls still in service will be penalized.

- If the total number of progeny sired by a stock bull is used as a performance measure it must be corrected for herd size in order to fairly compare stock bulls used in smaller herds with those used in larger herds.
Total number of progeny per stock bull
## Progeny per bull

<table>
<thead>
<tr>
<th>Bull category</th>
<th>Progeny sired at age 2</th>
<th>Progeny sired by 4 years old</th>
<th>Total progeny sired</th>
<th>Cows available over lifetime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full pedigree bulls</td>
<td>7.05</td>
<td>19.22</td>
<td>19.63</td>
<td>38.83</td>
</tr>
<tr>
<td>Grade bull with no evidence of mixed breed background</td>
<td>5.28</td>
<td>14.94</td>
<td>15.46</td>
<td>25.21</td>
</tr>
<tr>
<td>Grade bull with evidence of mixed breed background</td>
<td>4.54</td>
<td>12.62</td>
<td>13.24</td>
<td>17.72</td>
</tr>
</tbody>
</table>

The average number of progeny for each category is adjusted for the number of cows available to the stock bull, which accounts for stock bulls in smaller herds with less opportunity.
# Index comparisons

<table>
<thead>
<tr>
<th>Index</th>
<th>Pedigree bulls</th>
<th>Grade bulls no mixed breed</th>
<th>Grade bulls mixed breed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calving sub index</td>
<td>-11.32</td>
<td>-8.68</td>
<td>-4.77</td>
</tr>
<tr>
<td>Slaughter sub index</td>
<td>73.15</td>
<td>52.51</td>
<td>40.28</td>
</tr>
<tr>
<td>Maternal cow sub index</td>
<td>-41.87</td>
<td>-4.1</td>
<td>42.21</td>
</tr>
<tr>
<td>Daughter fertility sub index</td>
<td>7.46</td>
<td>17.49</td>
<td>27.51</td>
</tr>
<tr>
<td>Daughter milk sub index</td>
<td>-2.07</td>
<td>15.28</td>
<td>43.26</td>
</tr>
<tr>
<td>Overall suckler beef value</td>
<td>70.95</td>
<td>57.71</td>
<td>59.45</td>
</tr>
<tr>
<td>New suckler cow beef value</td>
<td>226.8</td>
<td>232.35</td>
<td>303.79</td>
</tr>
</tbody>
</table>
**Linear score comparison**

<table>
<thead>
<tr>
<th>Index</th>
<th>Pedigree bulls</th>
<th>Grade bulls no mixed breed</th>
<th>Grade bulls mixed breed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition Score*</td>
<td>5.27</td>
<td>5.00</td>
<td>4.43</td>
</tr>
<tr>
<td>Docility*</td>
<td>8.23</td>
<td>7.82</td>
<td>7.38</td>
</tr>
<tr>
<td>Hindleg side view*</td>
<td>6.96</td>
<td>6.82</td>
<td>7.24</td>
</tr>
<tr>
<td>Hindleg rear view*</td>
<td>7.87</td>
<td>7.74</td>
<td>7.90</td>
</tr>
<tr>
<td>Foreleg front view*</td>
<td>8.29</td>
<td>7.9</td>
<td>7.52</td>
</tr>
</tbody>
</table>

*Raw scores on a scale of 1 to 10 where feet and leg scores have been transformed so higher is better for all scores*
### Average number of progeny per bull by breed

<table>
<thead>
<tr>
<th>Breed</th>
<th>Average number of progeny sired between 2 and 3 years of age*</th>
<th>Average number of progeny sired by 4 years of age*</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>5.01</td>
<td>14.96</td>
</tr>
<tr>
<td>AU</td>
<td>5.01</td>
<td>13.98</td>
</tr>
<tr>
<td>BA</td>
<td>5.39</td>
<td>12.41</td>
</tr>
<tr>
<td>BB</td>
<td>4.56</td>
<td>12.56</td>
</tr>
<tr>
<td>CH</td>
<td>6.88</td>
<td>18.26</td>
</tr>
<tr>
<td>HE</td>
<td>5.88</td>
<td>15.37</td>
</tr>
<tr>
<td>LM</td>
<td>5.78</td>
<td>15.82</td>
</tr>
<tr>
<td>SA</td>
<td>4.38</td>
<td>14.44</td>
</tr>
<tr>
<td>SH</td>
<td>4.44</td>
<td>13.57</td>
</tr>
</tbody>
</table>

*These are means that have been adjusted for herd size
Genetic Parameter Estimation

- Heritabilities estimated for three measures of service length
  - Number of progeny at age 2
  - Number of progeny by age 4
  - Total number of progeny

- Determine a high quality set of data
  - Most promising results when only full pedigree status bulls are used
  - Some evidence of low $h^2$ but with high standard errors
Stock Bull Functionality. Where next?

- Comments/feedback?
- Undertake farmer survey re: stock bull satisfaction.
- Estimate genetic parameters.
- Produce genetic evaluations.
- Further comments/feedback.
- Implement 2013.
Euro-Star Implementation.

• Euro-Star material.
• Training & meetings.
• National events.
• Mart link-ups.
• Further research.
€uro–Star material.

- ICBF HerdPlus profiles.
- Herdbook on-line.
- €uro–Star catalogue.
- ICBF Active Bull List – now.
- Others......
ICBF Active Beef Bull Lists.

- Based on feedback from €uro–Star implementation group.
- Two separate lists; maternal & terminal.
- Includes overall indexes & some key profit traits.
- Edits applied to “fool–proof” list.
Maternal – Edits.

- Calving Difficulty Reliability $\geq 50\%$,
- Carcass Weight Reliability $\geq 50\%$,
- Daughter Calving Interval Reliability $\geq 50\%$,
- Minimum of 2.5 stars (within or across breed) for Maternal Index,
- Minimum of 2.5 stars (within or across breed) for maternal milk, and
- Minimum of 2.5 stars (within or across breed) for calving interval days.
- No S or F coded bulls.
- Semen available.
Terminal – Edits.

- Calving difficulty reliability $\geq 50\%$
- Carcass weight reliability $\geq 50\%$ and
- Minimum of 4.5 stars (within or across breed) for Overall Terminal Index.
- No “S” or “F” coded bulls.
- Semen available.
Comments & feedback (i)

• List should be “across breed”, ranked on €uro–Value.
  – Note: range of bulls & breeds at top of list for maternal and terminal.

• “Reduced list” for publication. Expand for general circulation, e.g., Top 75 bulls.
Comments & feedback (ii).

• List is too heavily edited. Need a list of “potential” bulls for breeders?
  – If the maternal index is correct, don’t need further edits.

• Is the maternal index correct?
  – How can a bull have a high maternal index, but be “poor” for female traits?
  – Further “help tools” being developed.

• Other feedback…….?
<table>
<thead>
<tr>
<th>Within breed star rating</th>
<th>Trait</th>
<th>Index €</th>
<th>Rel %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maternal index €</td>
<td>5</td>
<td>99</td>
</tr>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Calving difficulty</td>
<td>-63.93</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(b) Gestation</td>
<td>-3.95</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(c) Mortality</td>
<td>-19.99</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(e) Docility</td>
<td>5.32</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(f) Feed intake</td>
<td>18.19</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>(g) Carcass weight</td>
<td>186.9</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(h) Conformation</td>
<td>46.77</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(i) Carcass fat</td>
<td>16.05</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calf contribution (sum of a to i)</td>
<td>185.37</td>
<td>99</td>
</tr>
<tr>
<td>(j) Age 1st Calving</td>
<td>2.99</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(k) Maternal calving</td>
<td>4.91</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(l) Milk</td>
<td>-43.33</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(m) Calving interval</td>
<td>-36.97</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>(n) Survival</td>
<td>-10.78</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(o) Heifer feed intake</td>
<td>-88.64</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>(p) Cow feed intake</td>
<td>-87.06</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>(q) Cow docility</td>
<td>12.3</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>(r) Cull cow weight</td>
<td>64.15</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cow contribution (sum of j to r)</td>
<td>-182.42</td>
<td>99</td>
</tr>
</tbody>
</table>

Across breed star rating

-150 -100 -50 0 50 100 150 200 250
Training & meetings.

- 120 Teagasc advisors.
- BTAP groups.
- Herdbook meetings (council & club meetings).
- AI meetings (staff).
- Others?
“National” events.

• ICBF & Teagasc Suckler cow conference.
  – Huge success. 280 people attended.
  – National strategy re: replacements.

• ICBF HerdPlus & G€N€ IR€LAND Open Day. Tully on Saturday 10th November.
  – Target 500–600 farmers.
Mart link-ups.

- Pilot project with 2 marts (Cork & Ennis). Key elements;
  - Farmer permission,
  - No interruption to “normal” business,
  - Display boards (existing & new),
  - Terminals & printers.
- All categories of animals.

- Develop & test early 2013, roll-out thereafter..
Further research.

• Calving.
• Stock bull functionality.
• Beef performance evaluations.
• Maternal milk & influence of dairy genes.
  – 3k on-farm weights collected last week.
• Female fertility (age at first calving).
• Others?
GENE IRELAND (GI) Maternal Beef Breeding program. (Roll-out-plan)

Stephen Conroy, ICBF
31st October 2012
Bull breeder herds

- Letters sent out this week (Charolais breed)
  a. Cover letter
     • Joint letter
  b. Application form
  c. Terms & conditions

- Three main stages to the program
  1. Data assessment and validation
     a. Herd Data Quality Index
     b. Beef breeding chart
        • Missing pregnancy data
     c. Weight, docility & functionality records
        • ICBF personnel allocated to collect data
        • Pedigree animals only
Bull breeder herds cont’d

2. Herd Visit (GI personnel)
   a. Assess the current status of the herd
   b. Offer advise on the program
      • Focus on inconsistent management practices

3. Benefits of the program which include;
   a. Mating suggestions
   b. GI Bull breeding herd stamp
   c. Allocation of stored semen from GI AI bulls
   d. Potential purchase of a bull
AI companies

- Received the “agreement for services” contract

- Four main services to be provided
  1. Semen collection and processing
  2. Semen delivery to herd-owners
  3. Storage of semen
  4. Assembly and dispatch of semen on behalf of the program

- AI company informs ICBF of what services they would provide
  - Feedback has being positive to date

- Agree a standardised fee for services
Where to next

- Send out the GI material for each breed
  - Once agreed with the relevant Herdbook

- Establish working group for each breed
  - Initial meeting (November)

- Feedback welcome
GENE IRELAND Beef Progeny Test Centre – update.

31st October 2012
New intake

- 70 commercial bulls purchased
  - Over half are now at the centre
- Born: 1\(^{st}\) Oct 11 to 30\(^{th}\) November 11
- All from AI sires & MGS recorded
- 28 different sires represented (16 GI Sires)
- 9 breeds represented
- 12 herd owners
  - 10 GI Herds
Where to next

Potential dates

Current bulls (77 bulls):
• Start test: 21st August
• Finish test: 19th November
• Slaughtered: Late November/Early December

New intake (70 bulls):
• Start test: 26th November
• Finish test: 25th February 2013
• Slaughtered: March 2013

Feedback welcome
ICBF Beef Breeding Event

Saturday, 10th November 2012

- G€N€ IR€LAND progeny test centre, Tully, Co. Kildare
- From 10.30am to 2.00pm

Information includes:
- New Terminal and Maternal indexes
- HerdPlus
- ICBF weight recording service
- New GI Maternal Beef breeding program
- GI progeny test
  - Feed intake
  - Health and carcass traits
- Breeding industry stands
  - Space allocated upon request