Cow Own Worth – synergising data to provide a new tool to aid in culling decisions in seasonal dairy herds

M.M. Kelleher, D.P. Berry, P.R. Amer, A. Cromie, R. Evans

Speaker: Margaret Kelleher
ICBF Database

Farmers
- Bord Bia Irish Food Board
- Vet labs
- HerdPlus
- Marts
- Milk Co-ops
- Breed Societies
- Teagasc Research
- Milk recording
- Abattoirs
- Dept. Agri
- AI companies
- Milk recording

ICBF Database

HerdPlus Profits through Science

Teagasc Agriculture and Food Development Authority

Irish Food Board
Cow’s Own Worth (COW)

Designed to represent more closely the future phenotypic performance of dairy females

A new system to rank females on predicted profit potential

- Spring-calving system
- EBI – Economic Breeding Index (national breeding index)
- Centralised database
- Reward data recording herds with an added value service
Question – who would you cull??????

EBI €200

EBI €100
Question – who would you cull?????
Question – who would you cull??????

EBI €200
Parity 5
Calved April

EBI €100
Parity 2
Calved Feb
Question – who would you cull??????
Cow’s Own Worth (COW)
Expected profit from:

Current Lactation
- Milk
- Health
- Management
- Maintenance
- Fertility (calving date)

Future Lactations
- Milk
- Health
- Beef
- Calving
- Management
- Maintenance
- Fertility
- Descendants

+ predictions on fertility, survival and SCC performance

Net Culling Cost
- Cull cow value
- Replacement cost

Cow’s Own Worth
Current lactation profit

- Genetics effects
- Crossbreeding effects
- Individual effects
- Fertility (calving date)

Actual calving date

Age of cow:
- Feb
- Mar
- Apr
- May

Calving date:
- Current milk price
- Costs per calving month MDSM
Expected profit from:

Current Lactation
- Milk
- Health
- Management
- Maintenance
- Fertility (calving date)

Future Lactations
- Milk
- Health
- Beef
- Calving
- Management
- Maintenance
- Fertility
- Descendants

Net Culling Cost
- Cull cow value
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+ predictions on fertility, survival and SCC performance

Cow’s Own Worth
Future lactations profit

Future Lactations

- Milk
- Health
- Beef
- Calving
- Management
- Maintenance
- Fertility
- Descendants

+ predictions on fertility, survival and SCC performance
Future lactations profit

Future Lactations

- Milk
- Health
- Beef
- Calving

- Management
- Maintenance

Future milk price MDSM

Genetics effects

Age of cow

Crossbreeding effects

Calving date

Individual effects
Future lactations profit

- Descendants
- Cull cow value
- Replacement cost

EBI times
Cumulative Discounted Expression

Future Lactations

- Descendants
Future lactations profit

Actual calving date
- Feb
- Mar
- Apr
- May

Next calving date
- Feb
- Mar
- Apr
- May

Genetic effects
- EBV
- Heterosis

Future Lactations
- Fertility
  + predictions on fertility, survival and SCC performance
# Future fertility performance

## Transition matrices

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
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</thead>
<tbody>
<tr>
<td><strong>Best Genetics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion</td>
<td>0.14</td>
<td>0.53</td>
<td>0.22</td>
<td>0.08</td>
<td>0.03</td>
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<tr>
<td>Cost (€)</td>
<td>0.00</td>
<td>0.00</td>
<td>-151.00</td>
<td>-210.00</td>
<td>-437.00</td>
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<tr>
<td>(\sum) Cost (€)</td>
<td></td>
<td></td>
<td>-63.13</td>
<td></td>
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</tbody>
</table>

<table>
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<tr>
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<th>Mar</th>
<th>Apr</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Worst Genetics</strong></td>
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<tr>
<td>Proportion</td>
<td>0.13</td>
<td>0.39</td>
<td>0.25</td>
<td>0.15</td>
<td>0.07</td>
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<tr>
<td>Cost (€)</td>
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<td>-151.00</td>
<td>-210.00</td>
<td>-437.00</td>
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<tr>
<td>(\sum) Cost (€)</td>
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<td>-99.84</td>
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</table>

**Difference of €36.71**
Expected profit from:

Cow’s Own Worth

\[ \text{Cow’s Own Worth} = \text{Net Culling Cost} + \text{Future Lactations} + \text{Current Lactation} \]

Net Culling Cost
- Cull cow value
- Replacement cost

Current Lactation
- Milk
- Health
- Management
- Maintenance
- Fertility (calving date)

Future Lactations
- Milk
- Health
- Beef
- Management
- Maintenance
- Fertility
- Descendants

+ Predictions on fertility, survival and SCC performance
Net culling cost

Salvage value + Genetics_{CWT}

Cull value

Long term replacement requirement

Net Culling Cost
- Cull cow value
- Replacement cost

Replacement cost
<table>
<thead>
<tr>
<th>Group</th>
<th>Milk (kg) COW</th>
<th>Milk (kg) EBI</th>
<th>Fat (g/100g) COW</th>
<th>Fat (g/100g) EBI</th>
<th>Protein (g/100g) COW</th>
<th>Protein (g/100g) EBI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best (Top 25%)</td>
<td>6965 (6.17)</td>
<td>6674 (6.32)</td>
<td>4.07 (0.003)</td>
<td>4.11 (0.003)</td>
<td>3.57 (0.001)</td>
<td>3.57 (0.003)</td>
</tr>
<tr>
<td>Good</td>
<td>6695 (6.45)</td>
<td>6580 (6.27)</td>
<td>4.03 (0.003)</td>
<td>4.04 (0.003)</td>
<td>3.52 (0.001)</td>
<td>3.52 (0.003)</td>
</tr>
<tr>
<td>Poor</td>
<td>6512 (6.18)</td>
<td>6530 (6.27)</td>
<td>4.01 (0.003)</td>
<td>4.00 (0.003)</td>
<td>3.49 (0.001)</td>
<td>3.49 (0.003)</td>
</tr>
<tr>
<td>Worst (Bottom 25%)</td>
<td>6164 (6.08)</td>
<td>6467 (6.24)</td>
<td>3.97 (0.003)</td>
<td>3.93 (0.003)</td>
<td>3.44 (0.001)</td>
<td>3.44 (0.003)</td>
</tr>
</tbody>
</table>

Results: Milk production

€360 more value per cow per lactation for cows in top 25% versus bottom 25%
1. COW was able to identify cows performing well within my herd.

2. COW was able to identify cows for culling within my herd.

3. I would use the COW to help inform my culling decisions if it were to become a routine service from ICBF.

4. I found the report easy to read.

5. The summary tables were useful to highlight specific areas of production (EG: Top 10 and bottom 10 on COW, Top 10 and bottom 10 on milk solids, High SCC cows).

6. The colour coding of the top 10% and bottom 10% on important traits useful.

7. My milk recording information has more value now that I can receive a COW report.

8. I would like the COW to be generated for my herd from now on.

9. I would recommend the national extension of the COW to all dairy milk recording herds in 2017.
Profile development 2017

- Development underway
- Pilot phase scheduled July
- Farmers testing screens and accuracy of COW rank
- Potential to encourage more data recording with data completeness dash bars
Current data recording
Conclusions

- Complimentary to the EBI (national breeding index)
- Added value service
- Prospects to improve herd profitability
- Multiple sources of data available
- Live system
- Maximise COW accuracy by;
  - Recording **MORE** data
  - Recording **ACCURATE** data
- Pilot phase of on-line service July 2017
- Commercial roll-out September pending results of pilot phase
Questions?