IHFA Cork Club
27th Jan 2014
For tonight....

- Sexed Semen
- Update on EBI
The future role for sexed semen in the Irish dairy industry
Sexed semen

• CR 75% of Conventional: ie. 50% vs. 37%

• Recommended for use on heifers only

• Drop in CR not suitable for Irish seasonal system

• NZ data suggest near-normal CR with fresh sexed semen
Establish the potential of sexed semen in Ireland
  - dairy cows and heifers
Dairy trial carried out in Spring 2013
Industry partnerships and funding
15,000 inseminations
392 farmers, 100 AI technicians
Holstein Friesian - Study Design

Total number of straws
n = 15035

9 HF sires; 1670 straws each
X-sorted, female offspring

Each ejaculate processed 4 ways

Conventional fresh (3M)
\[ n = 4150 \]
Heifers: \( n = 1614 \)
Cows: \( n = 2536 \)

Sexed fresh (1M)
\[ n = 3749 \]
Heifers: \( n = 1572 \)
Cows: \( n = 2177 \)

Sexed fresh (2M)
\[ n = 3722 \]
Heifers: \( n = 1434 \)
Cows: \( n = 2288 \)

Sexed frozen (2M)
\[ n = 3414 \]
Heifers: \( n = 1490 \)
Cows: \( n = 1924 \)
Data collection

- All insems recorded on handhelds directly to ICBF
- Pregnancy diagnosis and BCS on ~ 4000 animals
- 2000 animals scanned and sexed
- Full results with calves on the ground in 2014
### Effect of sexing on conception rate

<table>
<thead>
<tr>
<th>Treatment</th>
<th>CR to 1st Service</th>
<th>CR as a % of Conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>53%</td>
<td>100%</td>
</tr>
<tr>
<td>Sexed Fresh 1m</td>
<td>39%</td>
<td>75%</td>
</tr>
<tr>
<td>Sexed Fresh 2m</td>
<td>46%</td>
<td>87%</td>
</tr>
<tr>
<td>Sexed Frozen</td>
<td>46%</td>
<td>87%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
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<th>CR as a % of Conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>49%</td>
<td>100%</td>
</tr>
<tr>
<td>Sexed Fresh 1m</td>
<td>32%</td>
<td>64%</td>
</tr>
<tr>
<td>Sexed Fresh 2m</td>
<td>37%</td>
<td>76%</td>
</tr>
<tr>
<td>Sexed Frozen</td>
<td>42%</td>
<td>85%</td>
</tr>
</tbody>
</table>
# Sex ratio by treatment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number of pregnancies</th>
<th>Heifer calves</th>
<th>% heifer calves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>244</td>
<td>134</td>
<td>55.0%</td>
</tr>
<tr>
<td>Sexed Fresh 1m</td>
<td>138</td>
<td>125</td>
<td>90.8%</td>
</tr>
<tr>
<td>Sexed Fresh 2m</td>
<td>154</td>
<td>139</td>
<td>90.2%</td>
</tr>
<tr>
<td>Sexed Frozen</td>
<td>172</td>
<td>156</td>
<td>90.7%</td>
</tr>
<tr>
<td>Overall (sexed treatments only)</td>
<td>464</td>
<td>420</td>
<td>90.5%</td>
</tr>
</tbody>
</table>
Herd variation in conception rate

CR1

Herd
Effect of BCS on conception rate

- Cow mean BCS = 2.8
- Heifer mean BCS = 3.3
Effect of DIM at insemination on conception rate

Days in milk at insemination

CR1

Sexed Semen Research Partners
Where to now?

• Very pleased with the sexed frozen results in general
• Wide range of views at farm level – strong view emerging that on-going research is needed, one year is not enough
• Real challenges for AI companies in terms of their business
  • Less dairy semen
  • Potential for low conception rates
• Clearly it won’t be suitable for everyone – strong technical performance at farm level is a pre-requisite
So for 2014....

• Calves starting to hit the ground, a real buzz with seeing heifer after heifer arriving
• Won’t be a lab in Ireland this Spring, but will be a stock of trial semen from last year and from other sources
• Looking to set up a longer term arrangement in conjunction with AI companies, Teagasc Research and Wider Agri-Industry from 2015 onwards.
Acknowledgements
EBI News

- Base Change
- Test Day Model
- Health and Disease Traits
### Base Change

<table>
<thead>
<tr>
<th>Parity</th>
<th>Num. Cows</th>
<th>Milk Kg</th>
<th>Fat Kg</th>
<th>Protein Kg</th>
<th>Fat %</th>
<th>Prot %</th>
<th>CIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>59,894</td>
<td>5540</td>
<td>216</td>
<td>188</td>
<td>3.90</td>
<td>3.39</td>
<td>399</td>
</tr>
<tr>
<td>2</td>
<td>53,871</td>
<td>6248</td>
<td>244</td>
<td>216</td>
<td>3.91</td>
<td>3.46</td>
<td>399</td>
</tr>
<tr>
<td>3</td>
<td>45,769</td>
<td>6587</td>
<td>258</td>
<td>227</td>
<td>3.92</td>
<td>3.45</td>
<td>397</td>
</tr>
<tr>
<td>4</td>
<td>36,331</td>
<td>7053</td>
<td>276</td>
<td>244</td>
<td>3.91</td>
<td>3.46</td>
<td>392</td>
</tr>
<tr>
<td>5</td>
<td>24,571</td>
<td>7026</td>
<td>277</td>
<td>243</td>
<td>3.94</td>
<td>3.46</td>
<td>381</td>
</tr>
<tr>
<td>1 - OLD</td>
<td>73,000</td>
<td>5194</td>
<td>197</td>
<td>171</td>
<td>3.79</td>
<td>3.30</td>
<td>404</td>
</tr>
</tbody>
</table>

**Change**
- Milk: -114.5
- Fat: -5.4
- Protein: -6
- CI: 2.8
- SUR: -0.96

**€ Change Overall**
- Milk: -114.5
- Fat: -5.4
- Protein: -6
- CI: 2.8
- SUR: -0.96
Base Change

Introduction of new models (TDM), or Economic Values may cause re-ranking however a base change DOES NOT cause a change in bull rankings.

Each animal is affected equally.

Necessary to ensure people can compare their animals to a relevant group of cows.

Current plan to introduce this August.
Test Day Model

- Test Day Model for Milk Production
  - a more effective way to do milk evaluations
  - The most common model around the world

- We got high correlations with existing results for both bulls (0.97) and cows (0.92) but.....

- Some of the results around FAT were not satisfactory and we were not happy that the proofs were correct

- We have submitted another test run to Interbull, but still not happy that we have got to the bottom of the issue
Genetics of Health and Disease

• Genetics of health and disease will be a key focus area.
• It is the next 'Fertility' issue to be dealt with.
• Similar discussions as we had with fertility:
  – Breeding can’t solve it
  – Heritability is too low
  – Etc
• Kicking off a Pilot project (100 herds)
BVD - sire prevalence

Prevalence

Number of bulls

Index | Euro | Rel |
--- | --- | --- |
EBI | 52 | 84% |
Milk Sub Index | 9 | 96% |
Fertility Sub Index | 19 | 69% |
Calving Sub Index | 36 | 98% |
Beef Sub Index | -12 | 98% |
Maintenance Sub Index | 9 | 87% |
Management Sub Index | -2 | 72% |
Health Sub Index | -8 | 63% |

D Berry, Teagasc
TB - sire prevalence

<table>
<thead>
<tr>
<th>Index</th>
<th>Euro</th>
<th>Rel</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBI</td>
<td>81</td>
<td>97%</td>
</tr>
<tr>
<td>Milk Sub Index</td>
<td>13</td>
<td>99%</td>
</tr>
<tr>
<td>Fertility Sub Index</td>
<td>60</td>
<td>97%</td>
</tr>
<tr>
<td>Calving Sub Index</td>
<td>14</td>
<td>99%</td>
</tr>
<tr>
<td>Beef Sub Index</td>
<td>-16</td>
<td>99%</td>
</tr>
<tr>
<td>Maintenance Sub Index</td>
<td>25</td>
<td>99%</td>
</tr>
<tr>
<td>Management Sub Index</td>
<td>0</td>
<td>80%</td>
</tr>
<tr>
<td>Health Sub Index</td>
<td>-15</td>
<td>91%</td>
</tr>
</tbody>
</table>

Ian Richardson

D Berry, Teagasc
Questions?