Bull team selection

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What is reliability?

- Each animal receives an EBI with a reliability figure
  - Same for the subindexes and component traits

- Reliability = how confident are ICBF that the published value reflects the true value of the animal
  - Measure of likelihood of the extent of movement
  - Not whether or not it will move
  - Varies from 0% (really ~30%) to 99%
EBI confidence interval

\[ \text{EBI} \pm 1.96\sqrt{1 - \text{Reliability}} \cdot €92 \]
Basis of bull teams (risk minimisation)

- 2 bulls – **UU** UD DU **DD** (25% U, 50% no change, 25% D)
  - “unlucky” – 1/4 times (25%)
- 3 bulls (2³) – **UUU**, **DDD**, UUD, UDU, DUU, DDU, DUD, UDD
  - “Unlucky” – 1/8 times (12.5%)
- 4 bulls (2⁴) – **UUUU**, **DDDD**, UUUD, UDUU, DUUU……
  - “Unlucky” – 1/16 times (6.25%)
- Difficult to improve in EBI if already well ahead

Assumes independence between tosses/bulls (and equal “usage”)
Bull teams

• Guidelines of min of 4 bulls per team were based on unrelated bulls equally used
• 5 bull team but 90% of cows in calf to just one of the bulls
  • Really just a one bull team
• 5 bull team of paternal half-sibs all from one genomically tested sire
  • If that sire drops in EBI, then all the bulls drop (and the inverse)
• ICBF sire advice does all the underlying calculations to generate bull team reliability (and inbreeding checks)
## Team size by herd size

Larger herds have “more skin in the game”

Risk is proportional to the extent of the variability

<table>
<thead>
<tr>
<th>Herd size bracket</th>
<th>Average herd size</th>
<th>Min number of bulls</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-50</td>
<td>25</td>
<td>7</td>
</tr>
<tr>
<td>51-100</td>
<td>75</td>
<td>7</td>
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<td>101-150</td>
<td>125</td>
<td>8</td>
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<tr>
<td>151-200</td>
<td>175</td>
<td>10</td>
</tr>
<tr>
<td>201-250</td>
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<td>11</td>
</tr>
<tr>
<td>251-300</td>
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<td>301-350</td>
<td>325</td>
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<tr>
<td>351-400</td>
<td>375</td>
<td>14</td>
</tr>
</tbody>
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The Irish Agriculture and Food Development Authority
Picking bulls

- EBI is the national breeding goal
- What is your breeding goal?
Conclusions

• Bull teams minimise the risk of all bulls falling
• Team reliability to-date based on unrelated, equally used bulls
  • Lower for related team with proportionally more matings to 1-2 sires
• ICBF sire advice does all the hard work – still a tool
• Sire selection
  • Where are you now?
  • Where do you want to go to?
Animal management for grass-based systems

Alignment of Grass Supply & Animal Requirements

Compact calving, high fertility status dairy herd