South West Fertility Field Day
May 2015
Introduction

- Introduce yourself
- How do you think fertility is going?
- What are you hoping to get out of today?
Aims

• Why should I collect data?
• How can I use it to make decisions?
• How can I use data to track my farm progress?
Why should we care about herd reproductive performance?

• MORE PROFIT
  – Higher milk production
  – Fewer carryover cows
  – Less wastage from cull cows
  – More replacement heifers

• LESS STRESS
  – Easier labour management
  – Reduced requirement for induction
What tools do we have to improve it?

- Synchronisation
- New technologies – pedometers, cow sensors
- Genetic selection
- Management changes

- INFORMATION
Fertility is complicated

→ 8 key management areas
Fast feedback vs slow feedback

• Fast feedback (~days)
  – Nutrition → change in vat
  – Mastitis → drop in cell count
  – Nitrogen → faster grass growth

• Slow feedback (~months to years)
  – Fertility → ???
How do we ‘measure’ reproduction?

• Snap judgements + gut feelings:
  – “The vet says most of them are empty...”
  – “I had to cull too many cows for infertility this year.”
  – “I don’t have enough replacements!”
  – “I’m keeping cows I don’t like just to maintain numbers.”
  – “I’m joining for longer and longer periods – calving drags on for ages!”

Delayed
Disappear quickly
Not always accurate
How do we *really* measure reproduction?

- **Overall:**
  - 6 week in-calf rate
  - Not-in-calf rate

- **Key drivers:**
  - Conception rates
  - 3 week submission rate

“All of the above”

“Now that we have our numbers…”

How are we doing compared to the rest of the industry?

What’s achievable?
Results from InCalf Fertility Data Project 2011
Trend in 6 week in calf rate from 2000 to 2009
The reproductive performance of the herds varied greatly.
Radnor properties – 2014 Spring herd

- **12w NICR**
  - B Knowles: 14%
  - Reasonable target: 13%
  - Stretch target: 18%

- **6w ICR**
  - B Knowles: 63%
  - Reasonable target: 60%
  - Stretch target: 71%

- **CR**
  - Reasonable target: 49%
  - Stretch target: 53%

- **3w SR**
  - Reasonable target: 77%
  - Stretch target: 86%
Why should I collect data for fertility?

• Because fertility is really complicated.
• Because fertility is hard to see.

• Without data, we don’t have feedback.
• Without data, we don’t know where we stand.
If you were consultants, what would you do?

- Step 1: Check how overall performance is going
- Step 2: Suggest improvements!
Using data to prioritise decisions

• Farmers who focus on 2-3 things get better results than those who try to fix everything at once
• In fertility, improvement takes time

• ACTIONS:
  1. Investigate and compare area benchmarks
  2. Prioritise
Prioritising management areas

- Bulls
- Calving pattern
- AI + Genetics
- Heifer management
- Heat detection
- Cow health
- Nutrition
How can I use data to make decisions?

- **Prioritise** areas to improve on farm
- **Focus** attention on what matters most
• Started focusing on reproduction
• Began gradual improvement of transition cow management program
• Started inducing earlier
• Started crossbreeding
• Started checking cows after calving

• Started improving heifer management
• Improved calf rearing practices
• Started mating heifers a week earlier
• Able to start culling for infertility
• Heifers still issue: but this year’s weights looking much better

Using data to track progress
Data can show us:

1. **Where we are now.**
   - How is our overall performance?

2. **Where to go in the future.**
   - What decisions should we make to improve?

3. **How we’ve made progress.**
   - Have our actions made a difference?
How to get started

Step 1: Collect data

Step 2: TAKE ACTION!

• Option 1: Do it yourself
  – Produce fertility focus report
  – Assess yourself against benchmark targets
  – Resources: *InCalf* book, *InCharge Fertility Workshops*

• Option 2: Hire an expert
  – Work with a reproduction consultant who will do the analysis for you
  – Resources: *ReproRight* & *InCalf* advisor list

• Option 3: Combination of both
The 8 key management areas

- Calving pattern
- Heifer management
- Cow health
- Nutrition
- Heat detection
- AI + Genetics
- Bulls
Calving pattern

- Why is calving pattern important?

<table>
<thead>
<tr>
<th>Calving to MSD interval</th>
<th>6-week in-calf rate</th>
<th>Not-in-calf rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 12 weeks</td>
<td>76%</td>
<td>5%</td>
</tr>
<tr>
<td>9–12 weeks</td>
<td>71%</td>
<td>6%</td>
</tr>
<tr>
<td>6–9 weeks</td>
<td>61%</td>
<td>9%</td>
</tr>
<tr>
<td>3–6 weeks</td>
<td>51%</td>
<td>13%</td>
</tr>
<tr>
<td>Less than 3 weeks</td>
<td>22%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Volume of uterine cavity in cattle

1 days post calving=6 liters-9kg
30 days post calving=0.2 liters – 0.5kg
What helps us assess calving pattern?

<table>
<thead>
<tr>
<th>Calving pattern</th>
<th>Target</th>
<th>My herd performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cows calved by week 3</td>
<td>greater than 61%</td>
<td>29%</td>
</tr>
<tr>
<td>Cows calved by week 6</td>
<td>greater than 94%</td>
<td>73%</td>
</tr>
<tr>
<td>Cows calved by week 9</td>
<td>greater than 100%</td>
<td>94%</td>
</tr>
</tbody>
</table>
What can be done to improve the calving pattern of your herd?

- Maximise submission and conception rates
- Check that a high % heifers are due in first 3 and 6 weeks, well grown heifers
- When buying in animals - check they will calve early
- Sell later calving cows?
- (Induction........?)
Heifer management

Why does it matter?

- Heavy, well-framed heifers:
  - Get in calf easier the first time
  - Produce more milk in their first lactation
  - Get back in calf sooner for their second lactation
  - Survive longer
  - Need less help with calving
  - Compete better
What information helps to assess heifer performance?

Liveweights

### Holstein-Friesians: Target heifer liveweights for high reproductive performance based on a mature cow liveweight just before calving of 550, 600 and 650 kg, and first calving at 24 months.

<table>
<thead>
<tr>
<th>When</th>
<th>Liveweight for typical heifers (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>550 kg</td>
</tr>
<tr>
<td>Mature cow liveweight</td>
<td></td>
</tr>
<tr>
<td>3 months (fully weaned)</td>
<td>100</td>
</tr>
<tr>
<td>6 months</td>
<td>151</td>
</tr>
<tr>
<td>9 months</td>
<td>204</td>
</tr>
<tr>
<td>12 months</td>
<td>256</td>
</tr>
<tr>
<td>15 months (matting)</td>
<td>307</td>
</tr>
<tr>
<td>18 months</td>
<td>358</td>
</tr>
<tr>
<td>21 months</td>
<td>413</td>
</tr>
<tr>
<td>24 months (pre-calving)</td>
<td>468</td>
</tr>
</tbody>
</table>
Calving pattern

<table>
<thead>
<tr>
<th>Mating start date for heifers last year.</th>
<th>% of heifers calved by week 3 of calving in the herd</th>
<th>% of heifers calved by week 6 of calving in the herd</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seek help</td>
<td>Top farmers achieve about</td>
</tr>
<tr>
<td>Same as cows</td>
<td>Less than 51%</td>
<td>73%</td>
</tr>
<tr>
<td>1 week earlier than cows</td>
<td>Less than 69%</td>
<td>81%</td>
</tr>
<tr>
<td>2 weeks earlier than cows</td>
<td>Less than 78%</td>
<td>87%</td>
</tr>
<tr>
<td>3 weeks earlier than cows</td>
<td>Less than 85%</td>
<td>92%</td>
</tr>
</tbody>
</table>

Milk production
<table>
<thead>
<tr>
<th>Heifer management</th>
<th>Target</th>
<th>My herd performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heifers calved by week 3</td>
<td>greater than</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>64%</td>
</tr>
<tr>
<td>Heifers calved by week 6</td>
<td>greater than</td>
<td>92%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90%</td>
</tr>
<tr>
<td>First calver milk production</td>
<td>greater than</td>
<td>83%</td>
</tr>
<tr>
<td>Heifer weight</td>
<td>greater than</td>
<td>target weight for age</td>
</tr>
<tr>
<td></td>
<td></td>
<td>96.6% &gt; 280kg at 15 months</td>
</tr>
</tbody>
</table>

**Heifer weights at joining (15 months)**

- **205-229**: 1
- **255-279**: 2
- **280-304**: 20
- **305-329**: 18
- **330-354**: 21
- **355-379**: 22
- **380-404**: 3
- **405-429**: 1
How can we improve heifer performance?

- Monitor their progress
- Have a nutritional plan – will most likely need supplement during dry season
- Preferential feeding of underweight heifers
- Join them earlier
- Contract rearing?
**Heifer Growth Rate Calculator**

This calculator is designed to work out what growth rate your heifers will need to achieve to meet their target.

- **Calving start date:**  1/05/2014
- **Calving weight:**  470 kg
- **Date:**  23/05/2014
- **Weight:**  400 kg

**Growth rate required:**  0.69 kg/day

As a rule of thumb, growth rates of 0.6-0.8 kg/day are fairly easy to achieve from quality pasture alone.

Growth rates above 0.8 kg/day may require supplementary feed.

You can use the Diet Calculator tool to see if your current diet is likely to achieve target growth rates.

Consult a nutritionist if your diet poses a risk of under-target heifers.
Cow health

- Welfare
- Affects reproductive performance
  - Directly, i.e. retained foetal membranes, vaginal discharge, etc.
  - Indirectly, i.e. lameness, displaced abomasum, ketosis, heat stress
- Reduces labour requirements
<table>
<thead>
<tr>
<th>Cow health</th>
<th>Target</th>
<th>My herd performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion rate</td>
<td>less than 8% (early preg test)</td>
<td>2.5% (early preg test)</td>
</tr>
<tr>
<td></td>
<td>5% (later preg test)</td>
<td></td>
</tr>
<tr>
<td>Assisted calvings</td>
<td>less than 6%</td>
<td>1%</td>
</tr>
<tr>
<td>Stillborn calves in non-induced cows</td>
<td>less than 1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Retained foetal membranes</td>
<td>less than 4%</td>
<td>2%</td>
</tr>
<tr>
<td>Vaginal discharge more than 14 days after calving</td>
<td>less than 3%</td>
<td>1-2%</td>
</tr>
<tr>
<td>Lameness in early lactation heifers</td>
<td>less than 3%</td>
<td>10%</td>
</tr>
<tr>
<td>Lameness in early lactation cows</td>
<td>less than 2%</td>
<td>5%</td>
</tr>
<tr>
<td>Other health problems (cystic ovaries, ketosis, displaced abomasums, etc.)</td>
<td>less than 5%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>
How can we improve cow health?

- Vet check post-calving/pre-joining to pick up problems early
- Good transition cow management prevents health problems around calving
- Have a plan for high risk heat stress days
- Check that tracks are well-maintained
- Manage inductions carefully
Condition & Nutrition

- Some early lactation loss is to be expected
- Excessive loss $\rightarrow$ ↓repro performance $\uparrow$disease risk
Body condition targets

### Condition & nutrition

<table>
<thead>
<tr>
<th>Cows with BCS <strong>less than 4.5</strong> at calving</th>
<th>Target</th>
<th>My herd performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cows with BCS <strong>more than 5.5</strong> at calving</td>
<td>Target</td>
<td>My herd performance</td>
</tr>
<tr>
<td>Average decrease in BCS</td>
<td>Target</td>
<td>My herd performance</td>
</tr>
</tbody>
</table>
How can we improve body condition?

- Practise body condition scoring!
- Check that cows aren’t losing too much between calving and joining
- Talk to your nutritionist
- Have a plan for underweight cows
How to body condition score a cow

1st Observation
How sunken is the area between the tail and pins?

- Deeply Sunken
- Sunken
- Slightly Sunken
- Filled In

2nd Observation

- Are the insides of the pins hollow?
  - YES
  - NO
- Is the backbone a bumpy sharp ridge?
  - YES
  - NO

The depression between the hip and pin is:

- U-SHAPED
- SHALLOW
- FLAT

Condition Scores:
- Condition Score 3
- Condition Score 3.5
- Condition Score 4
- Condition Score 4.5
- Condition Score 5
- Condition Score 5.5
- Condition Score 6
Heat detection

- If you don’t inseminate her, she won’t get pregnant!

<table>
<thead>
<tr>
<th>Heat detection</th>
<th>Target</th>
<th>My herd performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 week submission rate for mature cows that calved 6 weeks or more before the start of mating</td>
<td>greater than</td>
<td>92%</td>
</tr>
</tbody>
</table>

- Inter-heat intervals – the time between the majority of heats should be 18-24 days
  - If > could be missed heats
  - If < could be invented heats, weak heats, embryo loss
How can we improve heat detection?

- Make sure staff are trained (or recently revised) in heat detection techniques
- Take the time to do paddock observations
- Make sure we’re using heat detection aids effectively
Genetics
Insemination technique

Performance is affected by:
- Facilities
- Preparation
- Technique
- Timing

How can we improve things?

- DIY refresher courses
- DIY technician audit
AI & sire selection

Difference between technicians’ conception rates or non-return rate

<table>
<thead>
<tr>
<th>Technician</th>
<th>Number of cows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tech1</td>
<td>485</td>
</tr>
<tr>
<td>Tech2</td>
<td>165</td>
</tr>
<tr>
<td>Tech3</td>
<td>126</td>
</tr>
<tr>
<td>Tech4</td>
<td>50</td>
</tr>
</tbody>
</table>

Non-return rates

<table>
<thead>
<tr>
<th>Technician</th>
<th>Non-returned</th>
<th>Inseminated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tech1</td>
<td>825</td>
<td>59%</td>
</tr>
<tr>
<td>Tech2</td>
<td>277</td>
<td>60%</td>
</tr>
<tr>
<td>Tech3</td>
<td>235</td>
<td>54%</td>
</tr>
<tr>
<td>Tech4</td>
<td>107</td>
<td>47%</td>
</tr>
</tbody>
</table>

Target My herd performance

less than 15%

See graph
Bull management

<table>
<thead>
<tr>
<th>No. cows in milking herd</th>
<th>Likely % of herd pregnant at start of bull mating</th>
<th>Target</th>
<th>My herd performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very low (less than 40%)</td>
<td>Low (40–50%)</td>
<td>Moderate (50–70%)</td>
</tr>
<tr>
<td>100</td>
<td>2–4</td>
<td>2–3</td>
<td>2</td>
</tr>
<tr>
<td>200</td>
<td>5–6</td>
<td>4–5</td>
<td>3</td>
</tr>
<tr>
<td>300</td>
<td>7–8</td>
<td>6</td>
<td>4–5</td>
</tr>
<tr>
<td>400</td>
<td>9–11</td>
<td>7–8</td>
<td>5–6</td>
</tr>
<tr>
<td>500</td>
<td>12–13</td>
<td>9–10</td>
<td>7</td>
</tr>
<tr>
<td>600</td>
<td>14–15</td>
<td>11–12</td>
<td>8–9</td>
</tr>
</tbody>
</table>

Minimum number of bulls required to run with the herd in seasonal/split calving herds.

Bull management

Not in calf rate after 6 weeks of mating less than expected not in calf rate
Resources

- InCalf & Repro Right advisor list
- Your notes:
  - How to get a Fertility Focus Report
  - List of benchmarks (overall + management areas)
- The InCalf Book for dairy farmers
- InCharge Fertility Workshops
- Dairy Australia + ADHIS (websites, webinars, events)
Conclusion

• Have we met your expectations?
• Evaluation sheet

• Thank you!