DairyNZ

Profitability. Sustainability. Competitiveness.

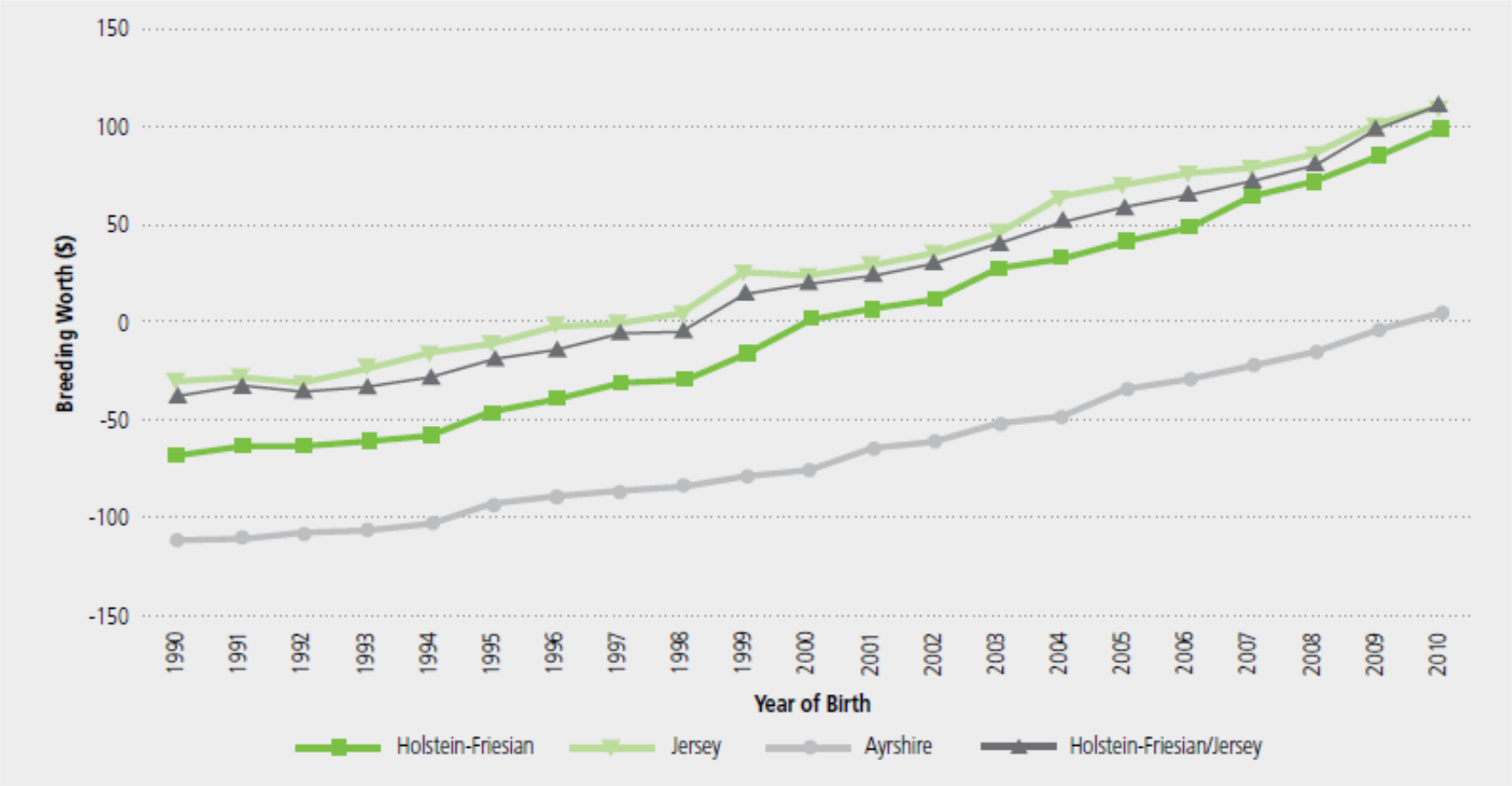
Historical and future developments in the New Zealand genetic evaluation system for dairy cattle

Jeremy Bryant (NZAEL Manager), Bevin Harris, Peter Amer, Rachel Wood

Key points

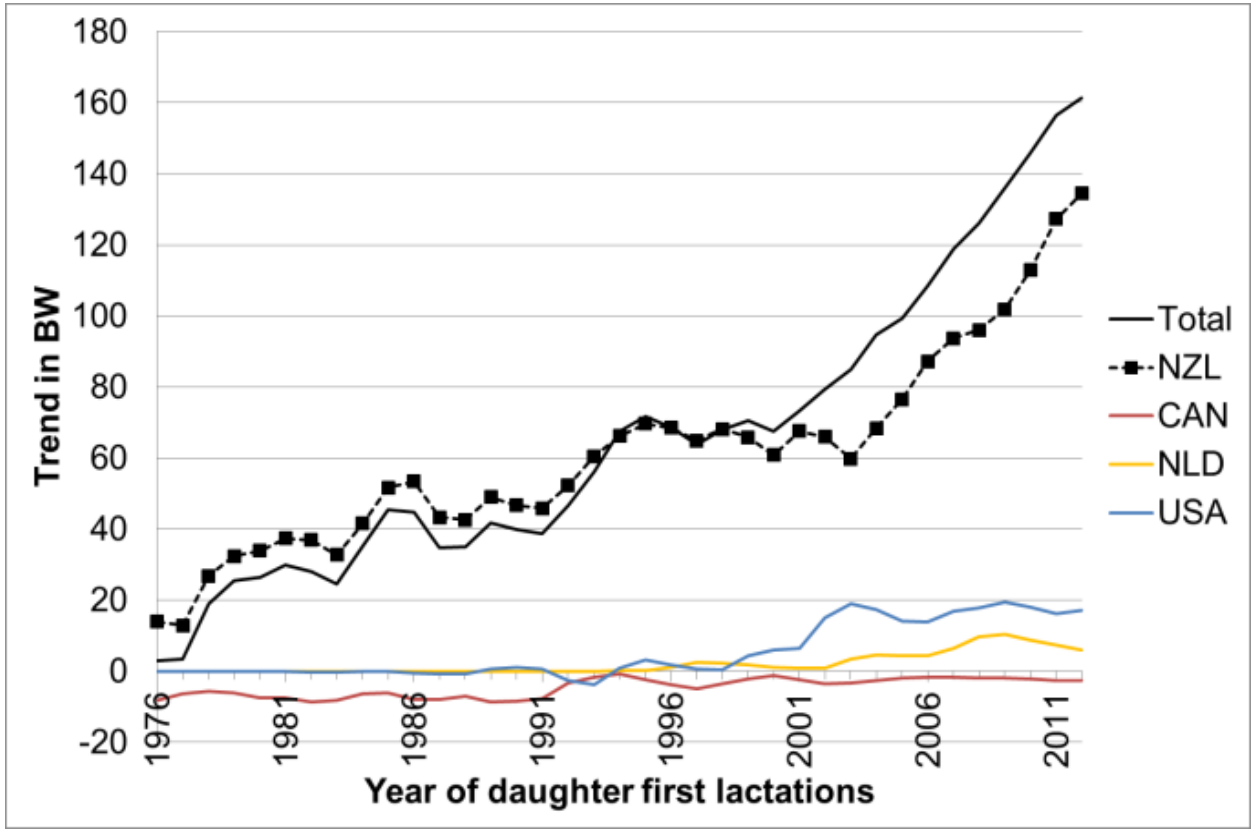
- Strong recording and AE history
- New database and shift of animal evaluation to NZAEL
- Traits and research of importance

Trend - Cow Breeding Worth



37% 11% 0.5% 43%

Source of genetic trend - HF



Amer et al 2013

DairyNZ

Why the success

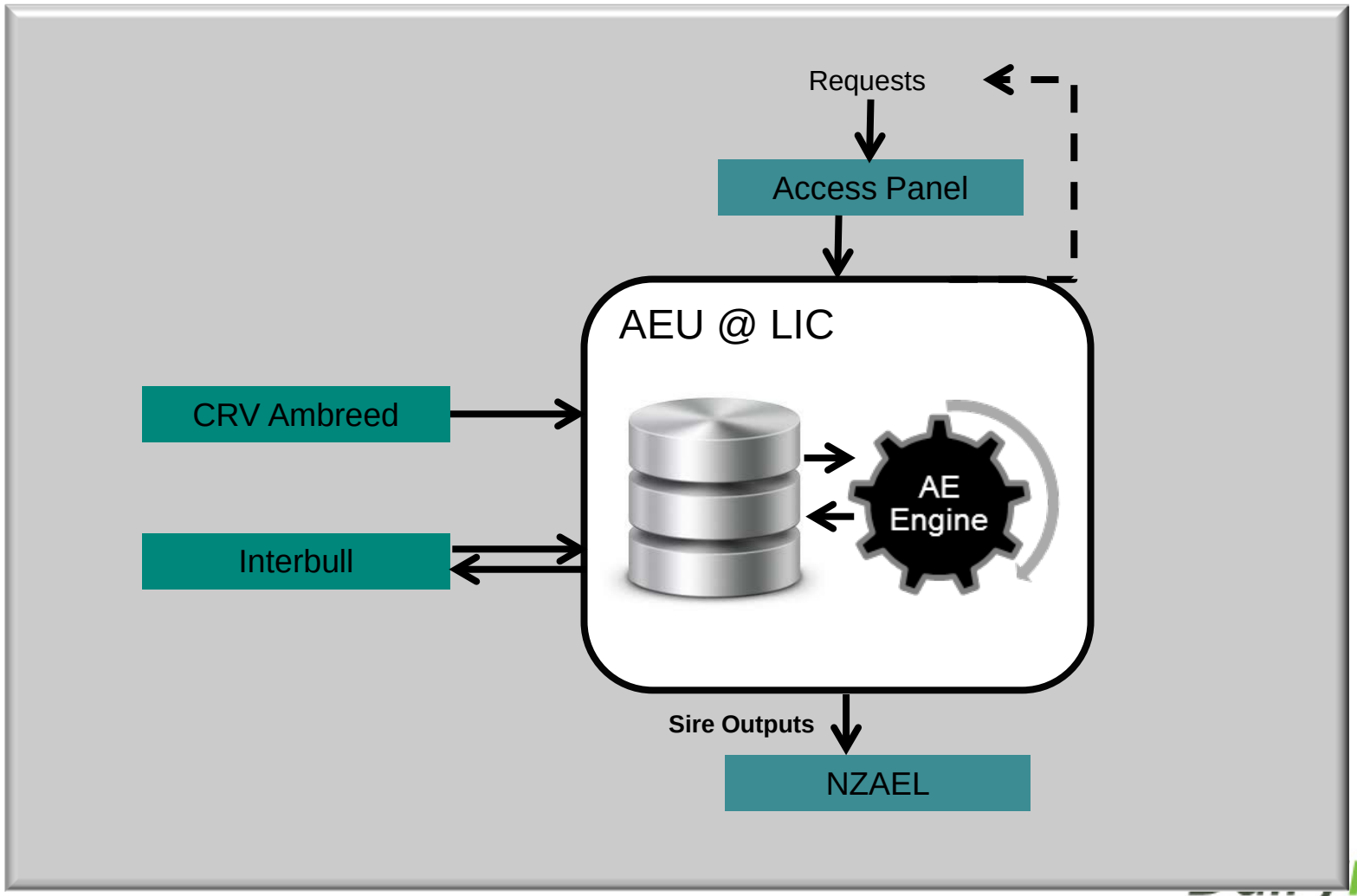
- Strong history - recording, herd testing, breeding infrastructure
- History of excellent quantitative geneticists
- Across breed, TDM, fertility BV, genomics
- Index that is economically relevant
- Investment – industry good and company

DairyNZ

Current State

Existing

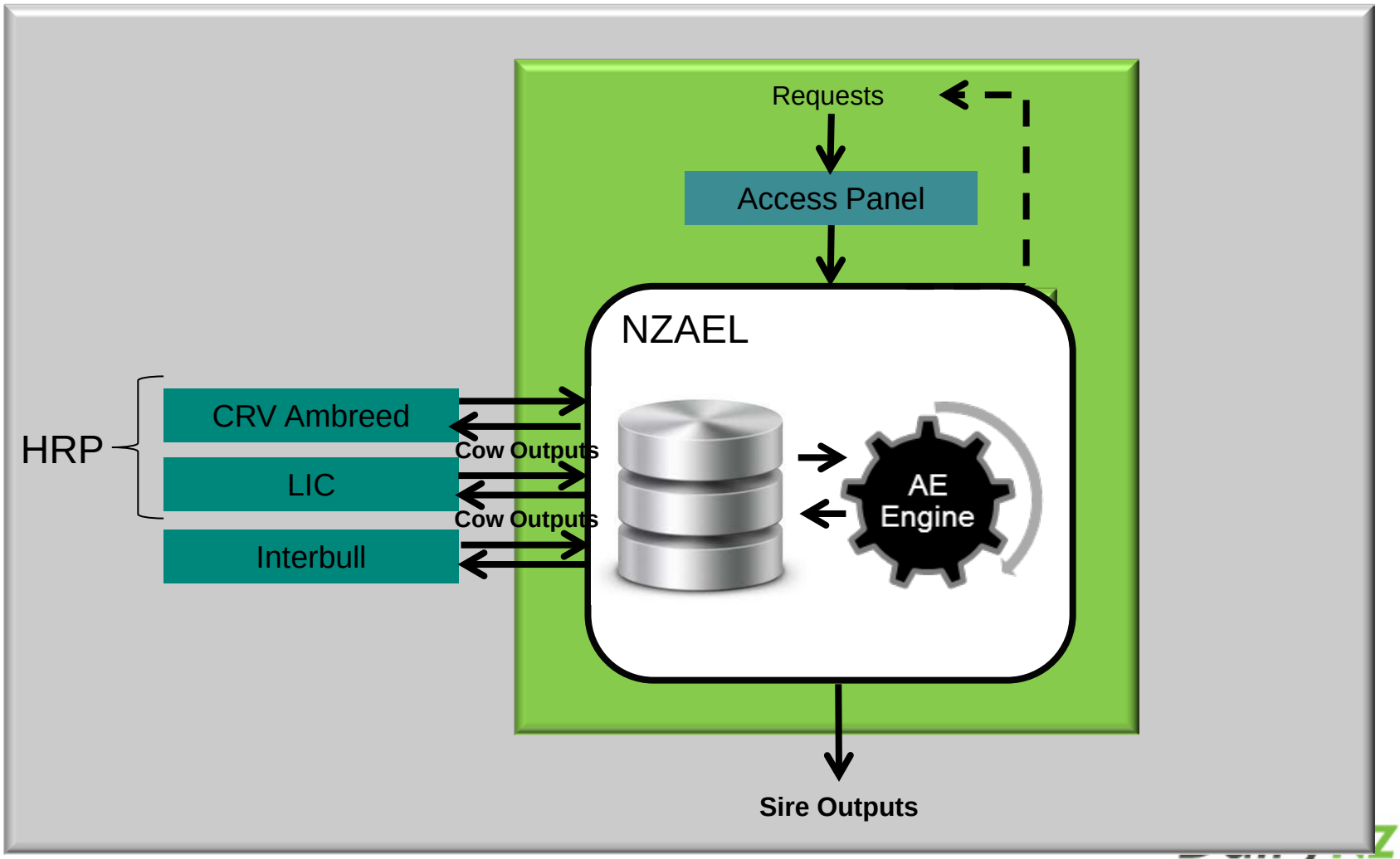
New



Future State

Existing

New



Principles - Transition

1. Utilise national and international experts, organisations and systems
2. Highly modular
3. Utilise business intelligence tools
4. Build deeper teams – genetics and IT

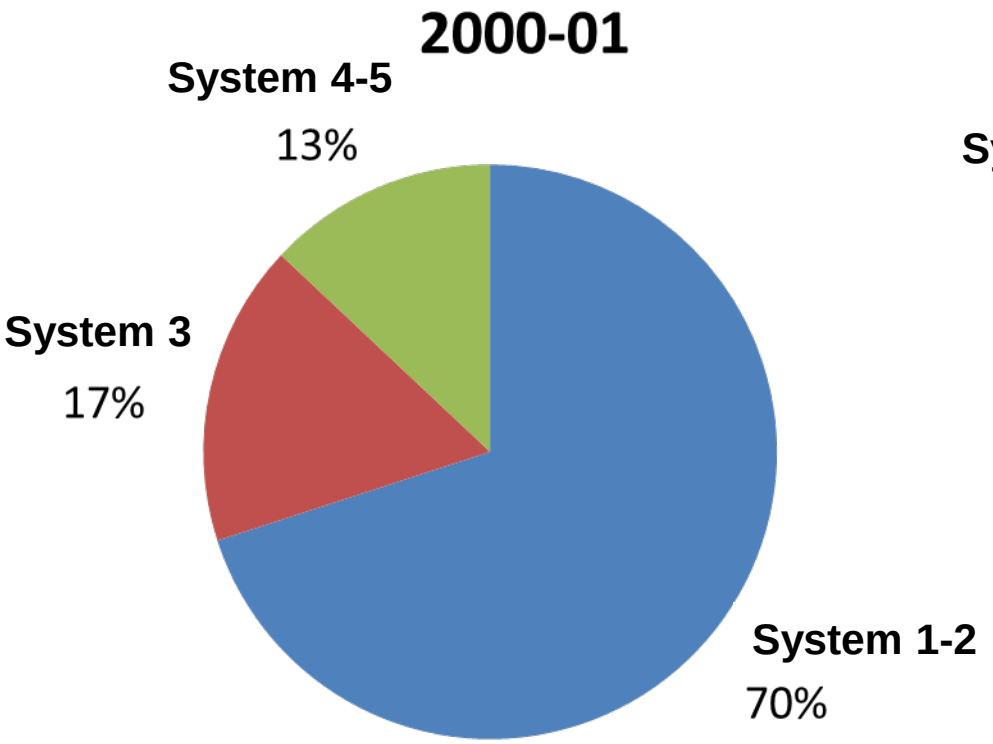
Parentage recording

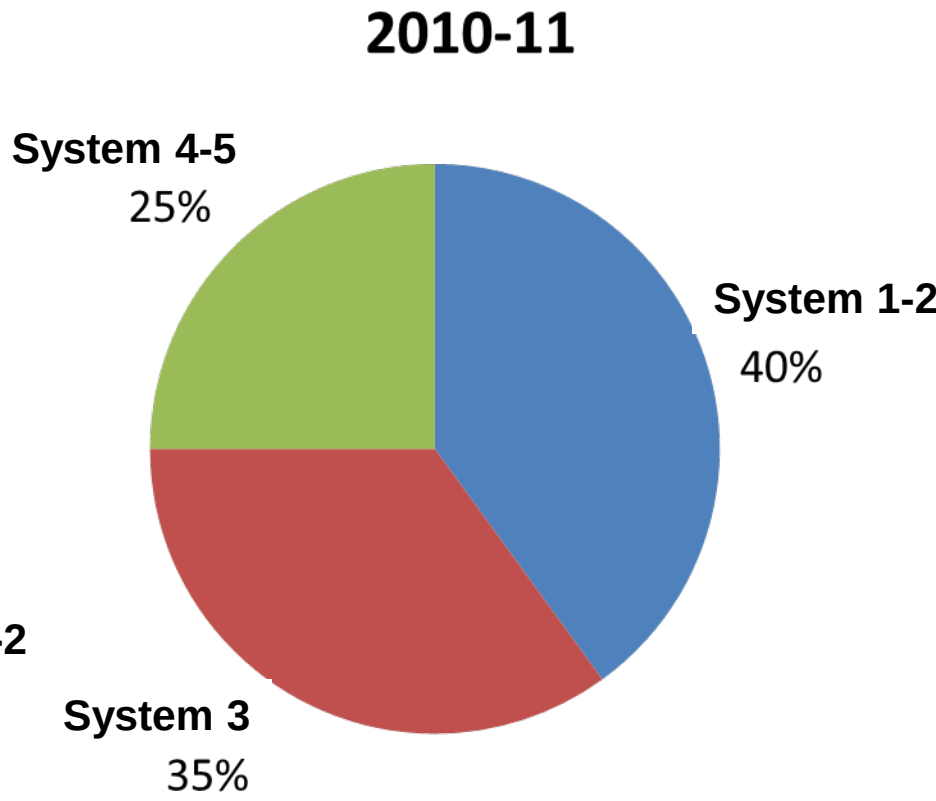
- Parentage misidentification rates are high
- Likely deflates genetic merit of elite bulls
- Theory: Within herd heritability estimates provide an indication of parentage identification quality and phenotype quality
- Herd heritability vs. sire misidentification
  - r = -0.38 to -0.50 (Dechow et al. 2008)

Body condition score

- BCS of 5 at calving essential for reproduction
- Animal welfare and public perception
- Economic value ($102/BCS)
  - Utilise cheaper feed in spring rather than winter for replenishment
  - Milk on longer
- Differences in BCS between breeds

Farm system shifts





System 1-2: < 0.5 t DM/cow imported feed

System 3: 0.5 to 1.0 t DM/cow imported feed

System 4-5: >1.0 to 3.0 t DM/cow imported feed

Source: DairyNZ Economics Group

Other initiatives

- Stronger links with universities, training institutes
- High quality and deeper phenotypic data - fertility BV enhancement, robotic and fixed in line herd testing, environmental traits
- Residual feed intake (RFI)
- Addressing genomic pre-selection

Conclusions

- Build on our strengths
- DIGAD and animal evaluation at NZAEL
- Addressing data quality and exploring new data sources
- System divergence
- Potential new traits for Breeding Worth
  – BCS, RFI