



INTEGRITY



INNOVATION



COLLABORATION



WE CARE



COMMITMENT

The Cogent *difference*

Breeding for Efficiency



HOW DO WE MAKE OUR COWS MORE EFFICIENT?

	1930s 'Elite' Cornell Cow ⁽¹⁾	2020s 'Elite' Cow
Liveweight	570	700
MJ Energy Requirement/d	128	229
Kg DM Requirement/d	12.4	24.2
Energy Corrected Milk Yield (litres/d)	12.4	40
Litres ECM/kg DM Consumed (FCR)	1	1.65

- Per tonne of dry matter fed, the modern dairy cow produces **650 litres more milk** than the dairy cow of the 1930s

1. Gaines, W. L. "Live weight and milk-energy yield in Holstein cows." *Journal of Dairy Science* 23.3 (1940): 259-265.

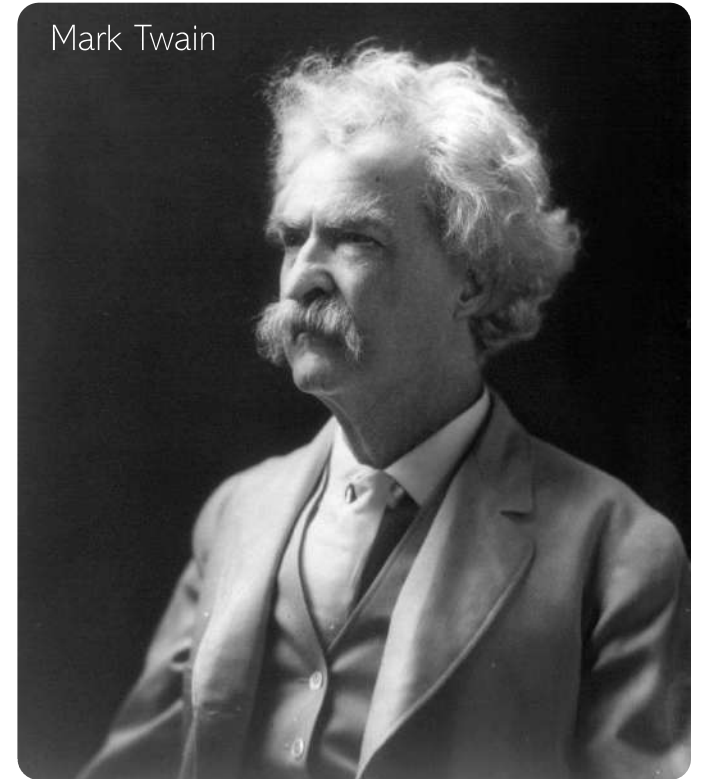
HOW DO WE MAKE OUR COWS MORE EFFICIENT?

- Per litre produced, the dairy industry of the 1940s required **10 times** the land area compared to the modern dairy industry ⁽²⁾
- Between 1980-2006, average fat + protein corrected milk yields of Holstein cattle improved by 3,500 litres/lactation ⁽³⁾
- 55% of this improvement can be attributed to genetic improvement ⁽³⁾

2. Capper, Jude L., Roger A. Cady, and Dale E. Bauman. "The environmental impact of dairy production: 1944 compared with 2007." *Journal of animal science* 87.6 (2009): 2160-2167.

3. Shook, G. E. 2006. Major advances in determining appropriate selection goals. *J. Dairy Sci.* 89:1349–1361.

Mark Twain



IS THE END PRODUCT IMPORTANT?

Globally, milk supplies the following nutrients...⁽⁴⁾

- 49% of calcium
- 24% of vitamin B2
- 18% of phosphorus
- 12% of protein
- 15% dietary fat
- Between 7 and 15% of essential amino acids

(4) Fonterra. How milk helps feed the world – the role dairy plays in global nutrition.
March 26, 2024





INTEGRITY



INNOVATION



COLLABORATION



WE CARE



COMMITMENT

The Cogent *difference*

Breeding for Even More Efficiency



HOW DO WE MAKE OUR COWS EVEN MORE EFFICIENT?

- Specialisation!
- We can't breed towards the middle of the road
- Cattle have been bred to suit systems – this needs to continue
- **Breed cattle that maximise the opportunities you give them.**

Main Influences

Cow factors

- Stage of lactation
- Age
- Health Status
- Genetics
- Rumination
- Sorting

Feed factors

- Balanced diet
- Digestibility
- Feed Presentation
- Forage quality and quantity
- Water availability

Management factors

- Overcrowding
- Group changes
- Feed delivery
- Milking frequency
- Feed availability

PEOPLE PLANET PROFIT



Kite

THE IMPACT OF FCR – HIGH INPUT/OUTPUT HERDS

The Cogent *difference*

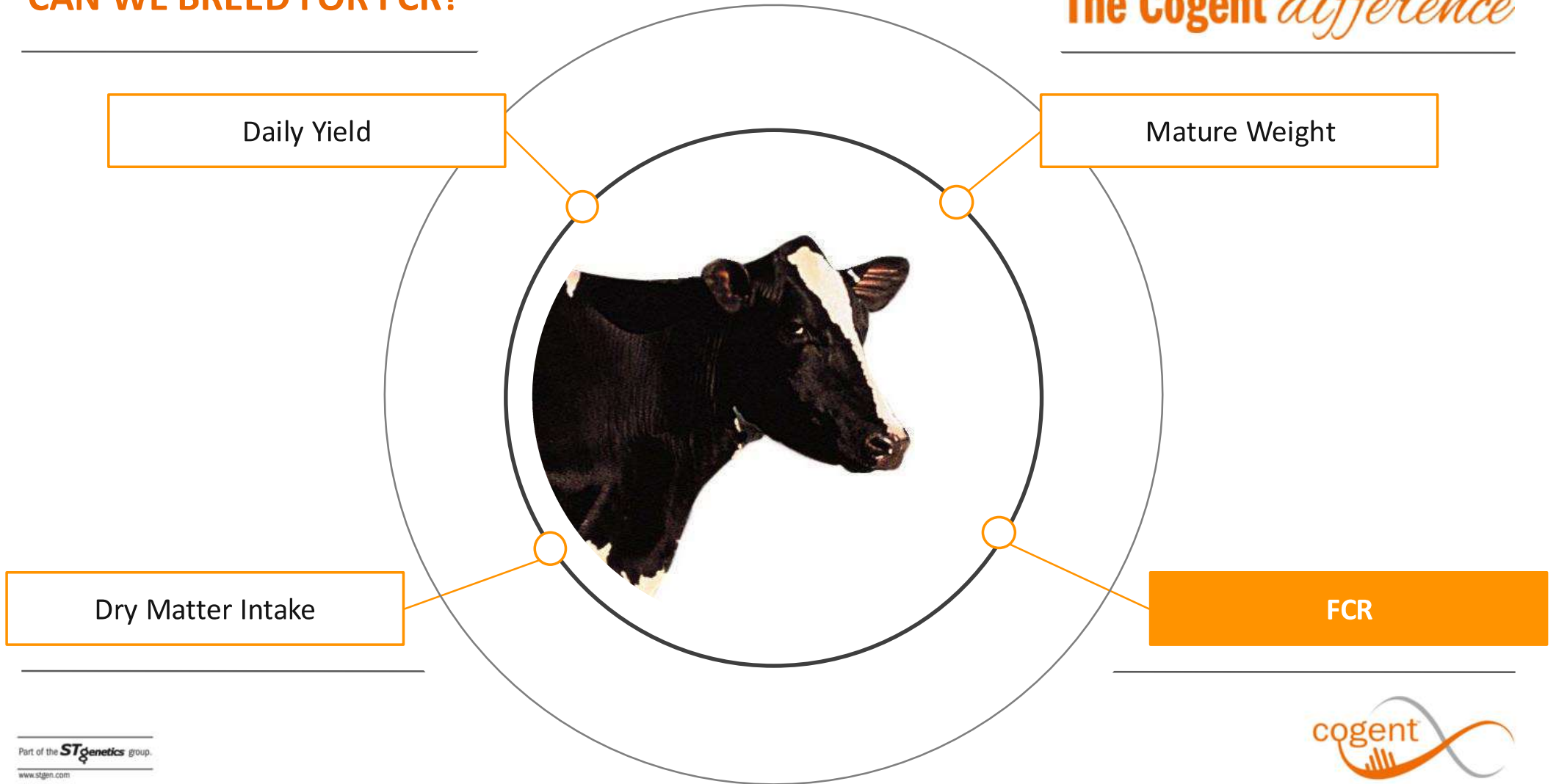
- Sensitivity analysis comparing a 2.5ppl milk price change to a 0.1 FCR change
- Example : 240 cows, 10,000 litres, 36ppl base price

+/- 2.5 ppl	+/- 0.1 FCR
+/- £50,000 MOAF	+/- £52,560 MOAF

- Every 0.1 gain in FCR gives an extra 100 litres sold per tonne of dry matter fed
- **In high input/high output systems, FCR is hugely important.**

CAN WE BREED FOR FCR?

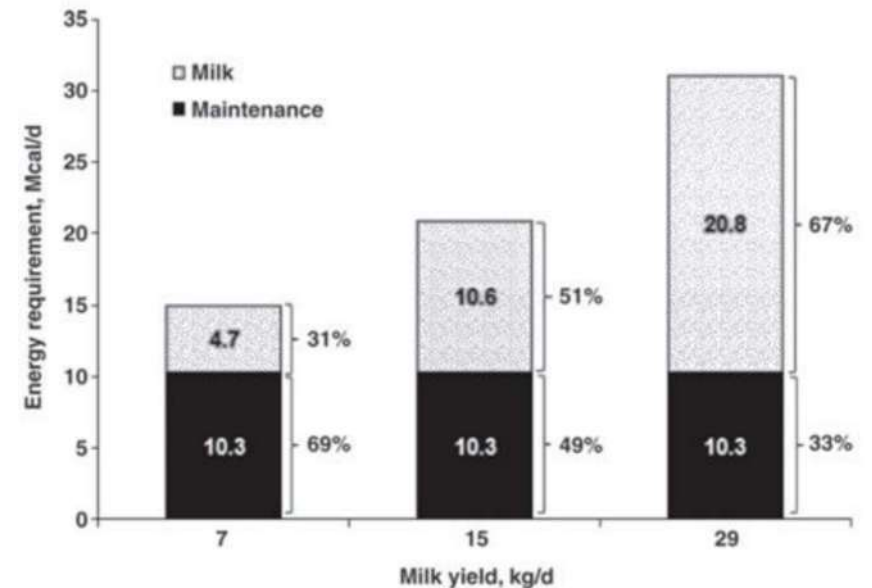
The Cogent *difference*



THE LEVERS AT OUR DISPOSAL : YIELD

The Cogent *difference*

- In high input/high output systems, yield is the most powerful lever
- Needs to be energy corrected, and relative to milk contract
- High heritability traits = rapid genetic gain



THE LEVERS AT OUR DISPOSAL : BODYWEIGHT

The Cogent *difference*

- In high input/high output systems (10,000 ltrs+) its power is limited
- Especially in year round housed, 3x milking systems
- We **don't** want bigger cows
- **BUT** small cows irrespective of yield aren't efficient in these systems

	1930s 'Elite' Cornell Cow ⁽¹⁾	2020s 'Elite' Cow
Liveweight	570	700
MJ Energy Requirement/d	128	229
Kg DM Requirement/d	12.4	24.2
Energy Corrected Milk Yield (litres/d)	12.4	40
Litres ECM/kg DM Consumed (FCR)	1	1.65

- In systems where yield is limited (perhaps an extended grazing period) bodyweight becomes a more powerful lever than yield – **SPECIALISATION!**

THE LEVERS AT OUR DISPOSAL : EcoFeed

- Individual feed intake measurements on >10,500 animals
- Continuous data collection
 - ✓ 2,000 heifers/year
 - ✓ 1,500 milking cows/year
- Creating reference population for EcoFeed

The Cogent *difference*



THE LEVERS AT OUR DISPOSAL : EcoFeed

- Using this information we can directly impact Residual Feed Intake (RFI)
- We can identify more efficient animals that give more milk per kg of feed fed
- When we feed a batch of cows, we feed the average cow in that group
 - ✓ In order to excel, we need to identify those animals that are much better than average
- Put simply...

High EcoFeed animals are more efficient producers of milk

The Cogent *difference*



BREEDING FOR FCR

- We can use all this information to form a breeding strategy
- If we produce genetics that
 1. **Yield** more energy corrected milk
 2. At the same or less **bodyweight**
 3. Convert **feed** consumed more efficiently
- We will have a major impact on the FCR potential of our herds
- This will drive **profitability** and **sustainability**

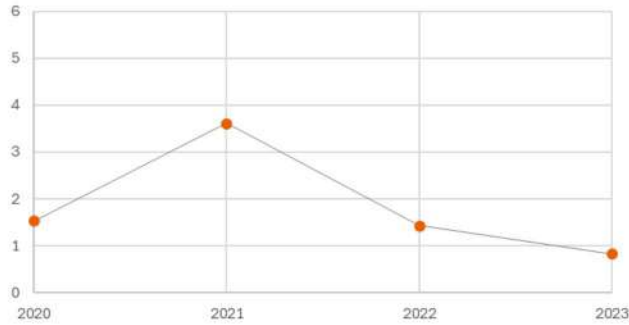
The Cogent *difference*



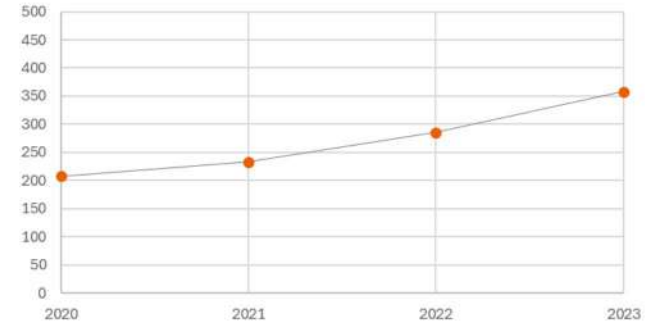
Trial Results : Rob Goodwin - Longlands Farm

The Cogent *difference*

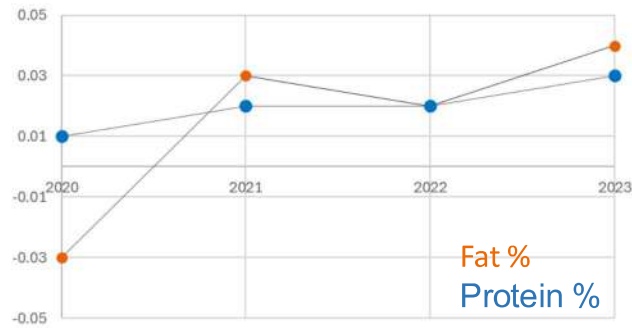
Bodyweight (Maintenance) kgs PTA



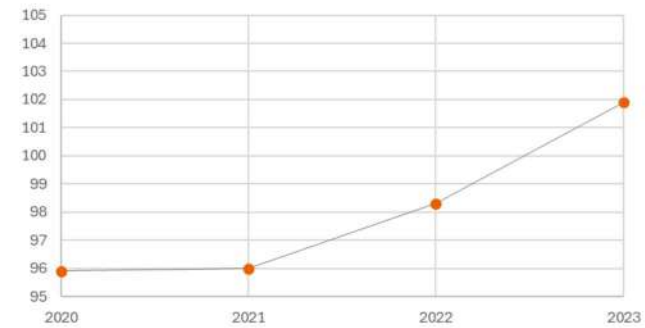
Milk (kgs) PTA



Components (%) PTA



EcoFeed



Trial Results : Rob Goodwin - Longlands Farm

	Milk kgs PTA	Fat %	Protein %	Bodyweight	EcoFeed	Genetic FCR (gFCR)
2020	208	-0.03	0.01	1.53	95.9	0
2023	358	0.04	0.03	0.83	101.9	+0.04
Change	+150	+0.07	+0.02	-0.7	+6	+0.04

- These are not unsustainable levels of genetic gain
- We could comfortably maintain this level of progress for 10+ years with the genetics we have today, not to mention what we will have years down the line...

Projections: Rob Goodwin - Longlands Farm

	Milk kgs PTA	Fat %	Protein %	Bodyweight	EcoFeed	Genetic FCR (gFCR)
2020	208	-0.03	0.01	1.53	95.9	0
2030	708	0.20	0.08	-0.8	115.9	+0.13
Change	+500	+0.23	+0.07	-2.3	+20	+0.13

- The genetics to produce these animals to a large extent exist today
- +500kgs PTA would put another 1000kgs of milk in the tank per animal at Longlands farm

Projections: Longlands Farm- Impact

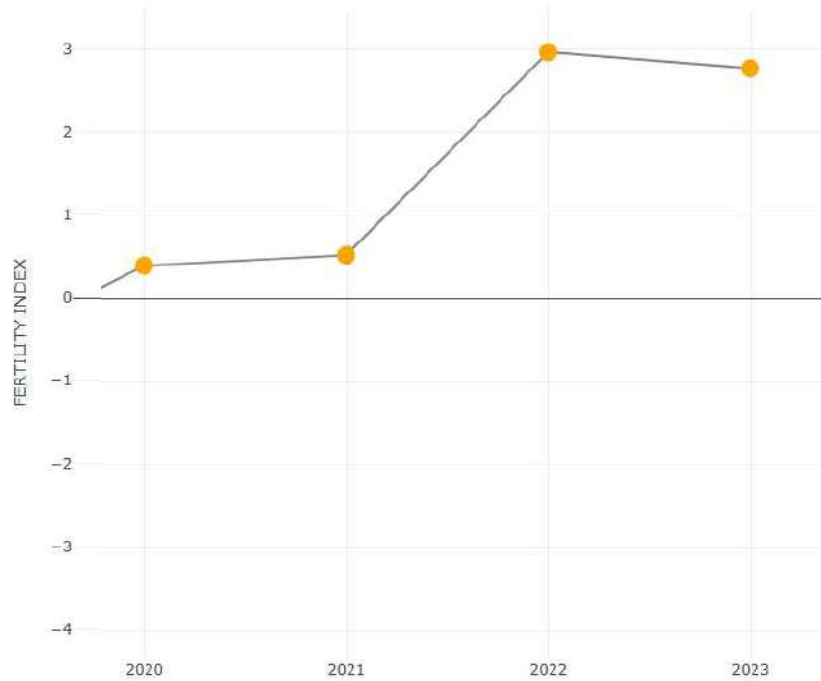
Change in gFCR	+0.13
Feed fed per day (Fresh)	13t
Tonnes DM fed/day	5.2
Additional milk/day from increased efficiency	676 litres
Milk Price (ppl)	36ppl
Annual Value of Additional Milk	£88,800

- We added 0.6 to FCR in 60 years (0.1/year) without genomics, RFI etc (improved genetics + environment)
 - It is perfectly reasonable to assume that in 10 years with all these technologies we can >0.1 with genetics alone
 - The impact for businesses that utilise this will be immense
-

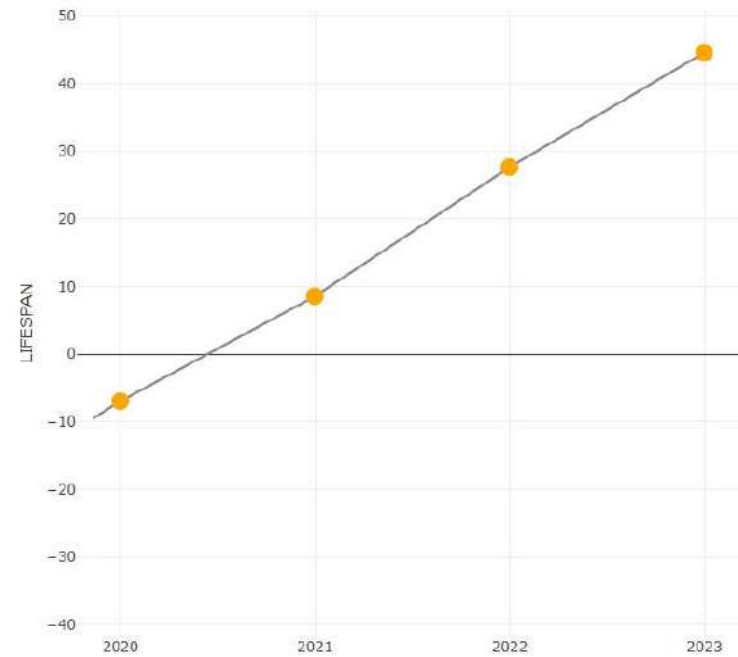
Efficiency Goes Beyond Milking Cows

The Cogent *difference*

Fertility Index



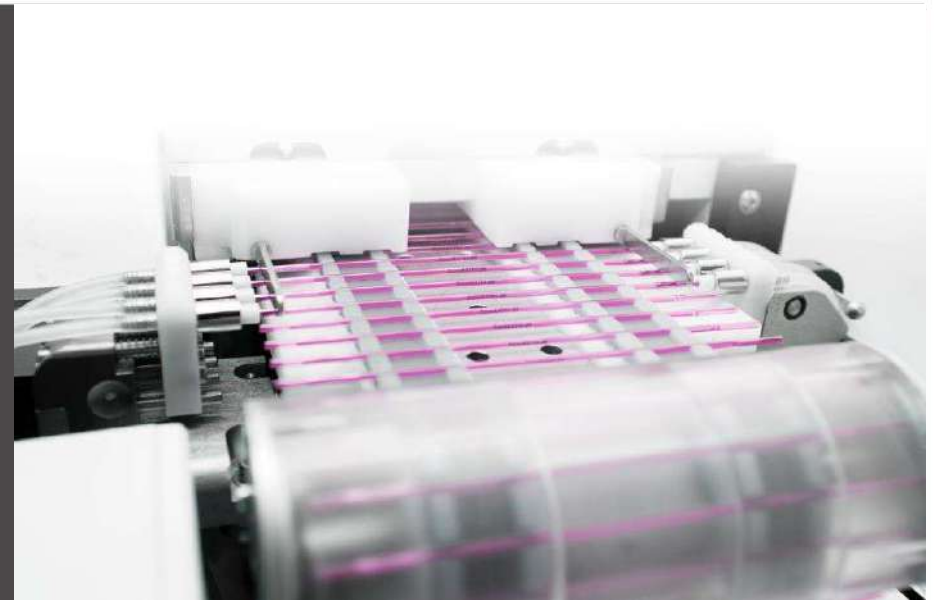
Longevity



SUMMARY

The Cogent *difference*

- Holstein cows are already extremely efficient
- To further drive efficiency, breeding goals need to be system specific
- In high input/high output systems, genetic FCR is the most economically and environmentally important trait moving forwards
- Cows have to be bred regardless, make those breeding decisions work for your system





INTEGRITY



INNOVATION



COLLABORATION



WE CARE



COMMITMENT

The Cogent *difference*



Thank You.