Euroopa Maaelu Arengu Põllumajandusfond: Euroopa investeeringud maapiirkondadesse

Data driven farming

Bartele Verbeek

EPKK Aretuskonverents

April 8, 2022

Alta

What Alta does

Alta builds long-term relationships by creating value for our clients. We improve individual herd profitability by delivering trustworthy genetics and high quality reproductive and management services.

Create Value, Build Trust, Deliver Results

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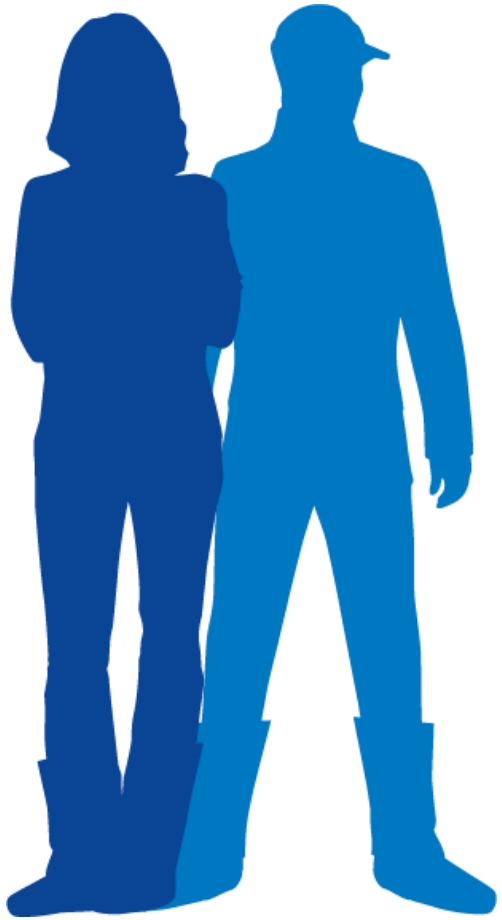
The Alta Team



1,700 Alta people
deliver Alta products and services to
38 thousand farms representing over
16 million cows in more than
60 countries

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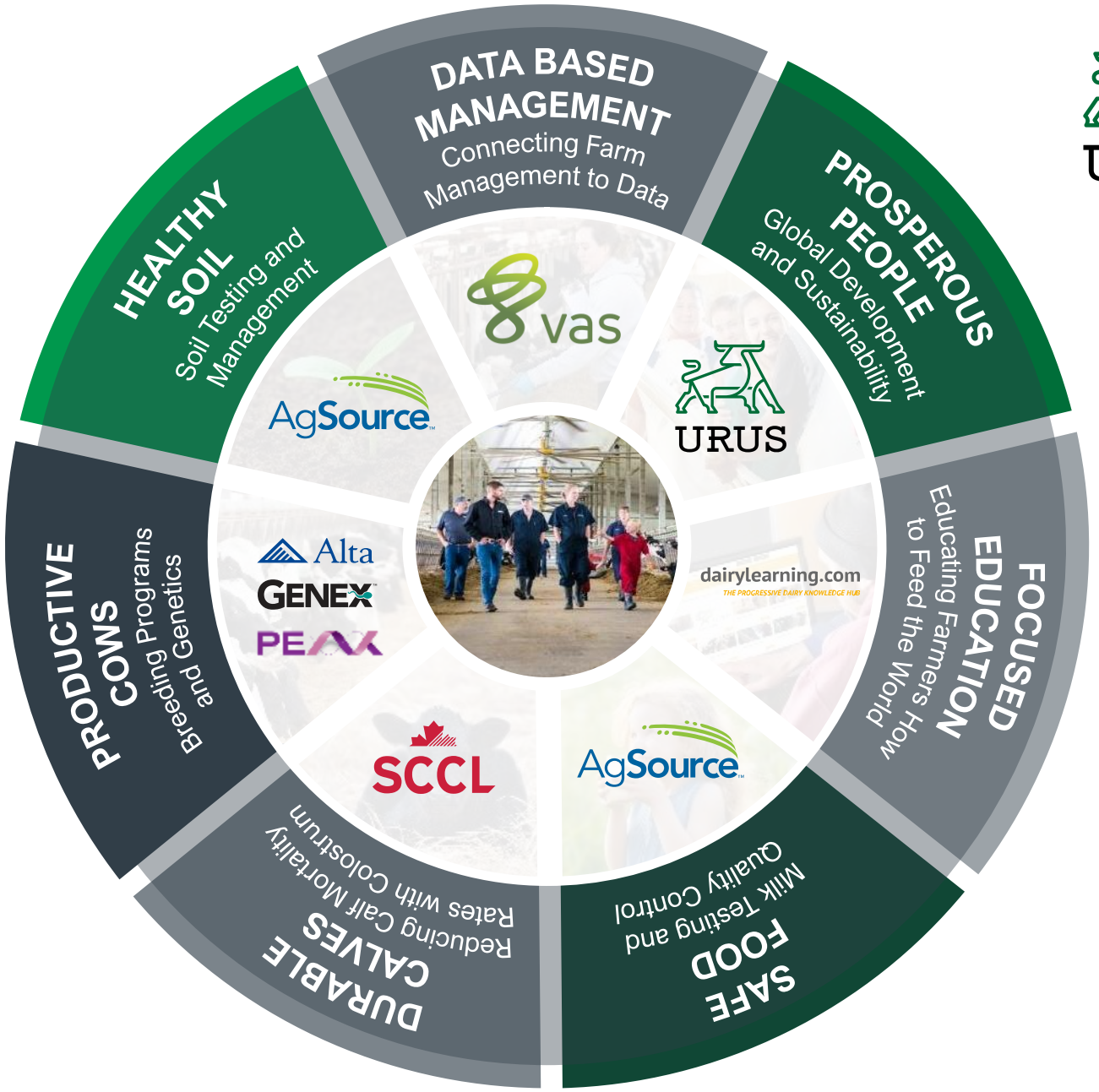
A **sustainable** future for farmers and our children



URUS

Farm data management and evaluation

Use KPI`s to achieve better results

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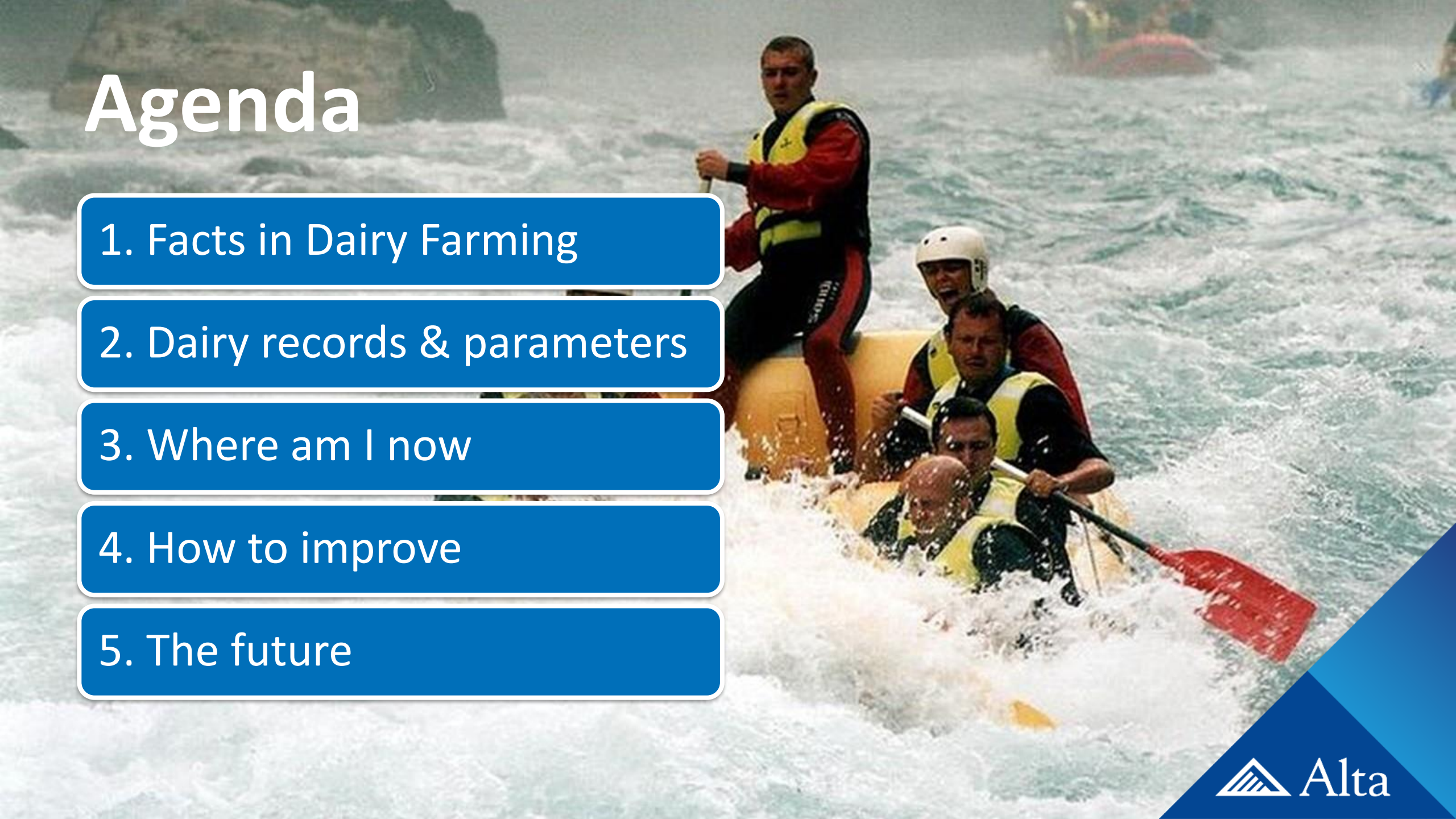
Agenda



1. Facts in Dairy Farming
2. Dairy records & parameters
3. Where am I now
4. How to improve
5. The future

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1. FACTS IN DAIRY FARMING

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What we experience

- Change is the only constant:
  - We live in permanent whitewater, we hardly know where we are and what's ahead of us.
  - We need a change protocol!!
- Our environment is changing too; we need a license to produce
- Technology impact in our lives is rapidly increasing
- Farming as a business is a great way of life!!
  - What we can't measure, we can't manage
  - We need data / paramaters that call for action→ KPI's

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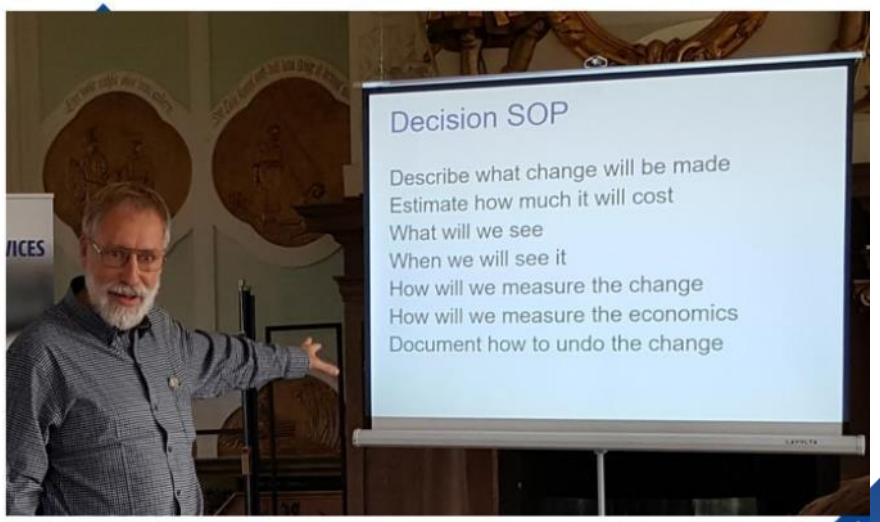
Change protocol

- Describe what change to be made
- Estimate how much it will cost
- What will we see
- When we will see it
- How to measure the change!!
- How will we measure the economics
- Document how to undo the change



Dr. Steve Eicker explaining his decisions SOP, please consider this when you propose changes to a dairyman.

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2. DAIRY RECORDS & PARAMETERS

Why Dairy Records & Analysis?

- To get a snapshot of where are today
- To measure something that changes
  - Decide if an intentional change is working
  - Decide if something needs to be fixed (a process failed and we need to identify and change the process)

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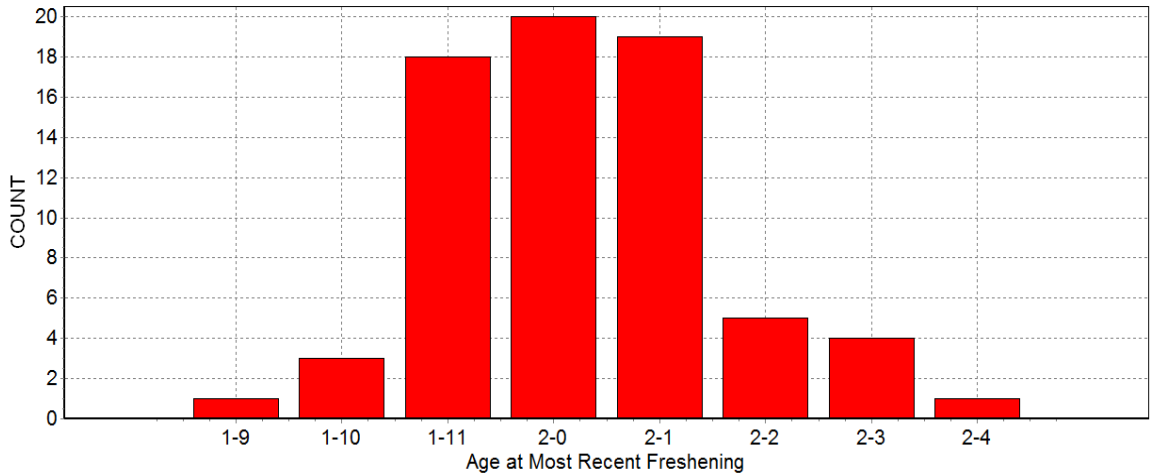
Challenges with typical parameters: e.g. Age at Freshening

- Variation — A few cows can change the average
- Lag — At least 9 months
- Momentum — At least 12 months
- Bias — Only pregnant animals



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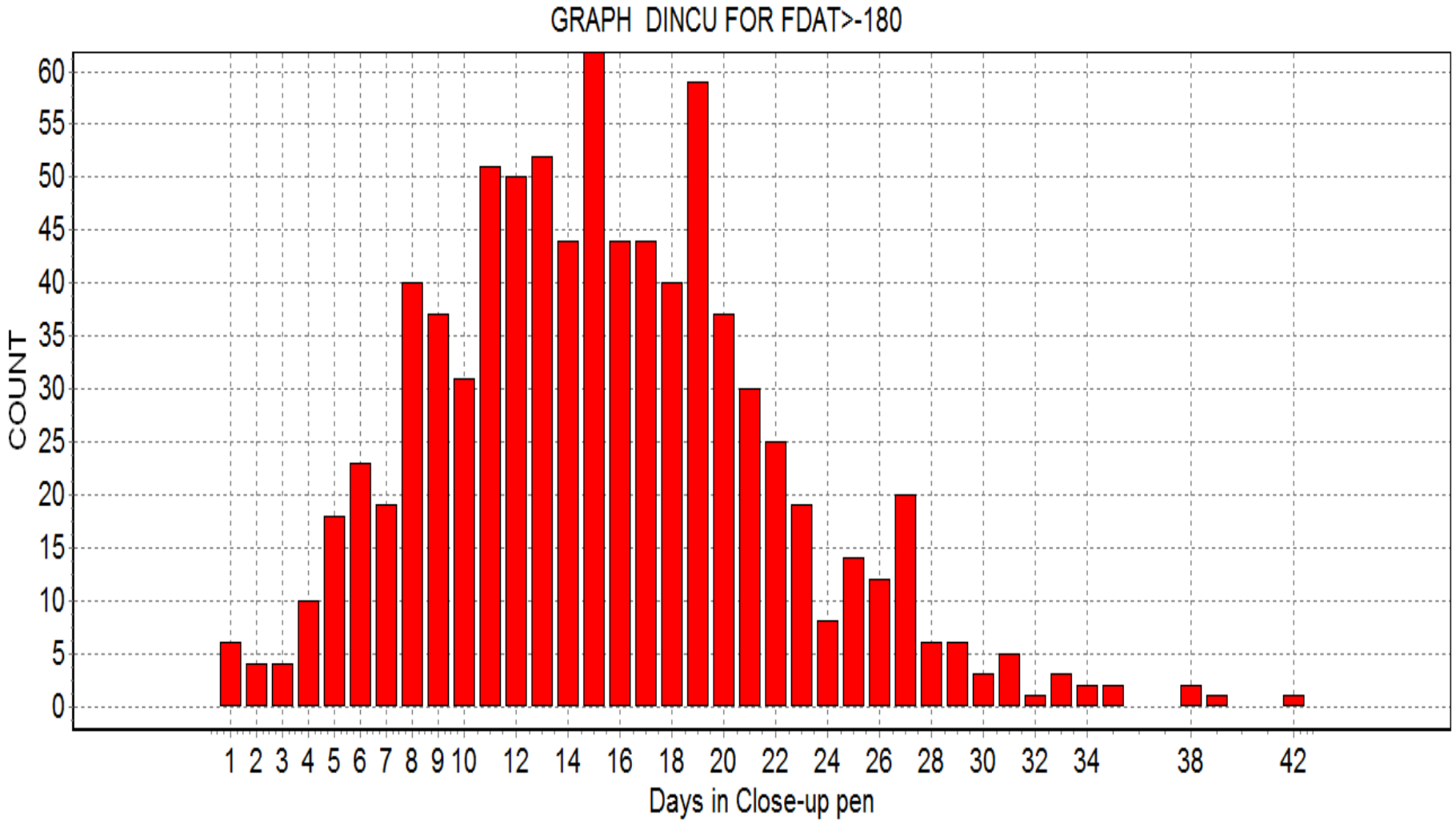
Are cows being moved into the close-up pen on a timely basis?



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“Farming. It’s what we do.”
It’s what *we* do that makes it more profitable & sustainable.
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Why using data or parameters?

3. WHERE IS MY DAIRY TODAY

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Where is my dairy today?

	Alta Benchmark summary all KPIs in Q4 2021	Your Dairy	Goal	Group Ø (> 1000 Cows)	Alta Benchmark Ø All	Alta Benchmark Top 10
	# cows	1224		1445	657	
	KG Milk (ECM)	47,1	> 30,0	33,8	33	40,5
Repro	Pregnancy Rate (PR)	35%	> 24%	20%	20%	31%
	Heat Detection Rate (HDR)	68%	> 60%	54%	53%	70%
	Conception Rate – all services	56%	> 40%	36%	38%	55%
	Conception Rate - 1st service	59%	> 45%	38%	39%	62%
	% not pregnant at >150 DIM	3%	< 7%	9%	9%	2%
	% Pregnant at 120 DIM	82%	> 70%	60%	63%	79%
	% Pregnant per month	8%	Ø 9%	8%	8%	11%
	% Cows pregnant	57%	> 55%	50%	52%	64%
	Voluntary Wait Period	65	< 70	81	78	59
	Days Open	92	< 120	126	121	96

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Dairy business:

The Dairy Farm

We turn feed into milk and need daily IOFC info

(IOFC = Income Over Feed Cost)

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What is feed used for?

55%

Maintenance and growth

45%

Milk

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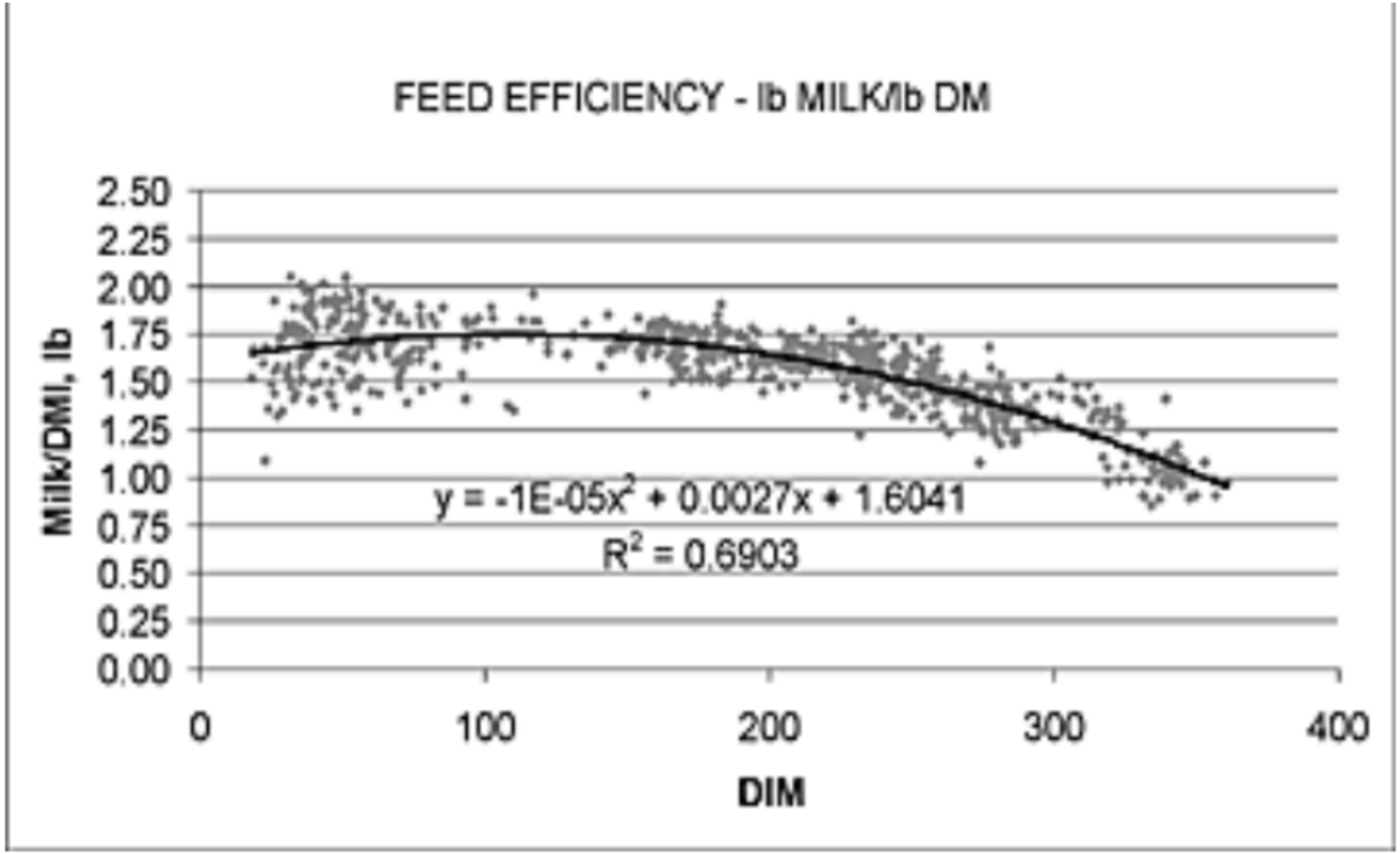
Feed efficiency related to Days in Milk



Setting and reaching goals

4. HOW TO IMPROVE?

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Farm change or growth areas

- ❑ Leadership, organization and management
- ❑ Decision making and economics
- ❑ Genetic plan and strategy
- ❑ Calf & heifer rearing
- ❑ Repro management
- ❑ Feeding / nutrition
- ❑ Cow comfort
- ❑ Transition management
- ❑ Cow health
- ❑ Knowledge (training)
- ❑ Production (as result of changes above)

Leadership and Management

- Doing the right things
  - Requires Vision
- Doing the right things well
  - Requires great management
- Great results are based on great choices
  - We need data that help us make the best choices; KPI's

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Success is depending on the choices you make!
Good to Great - Jim Collins
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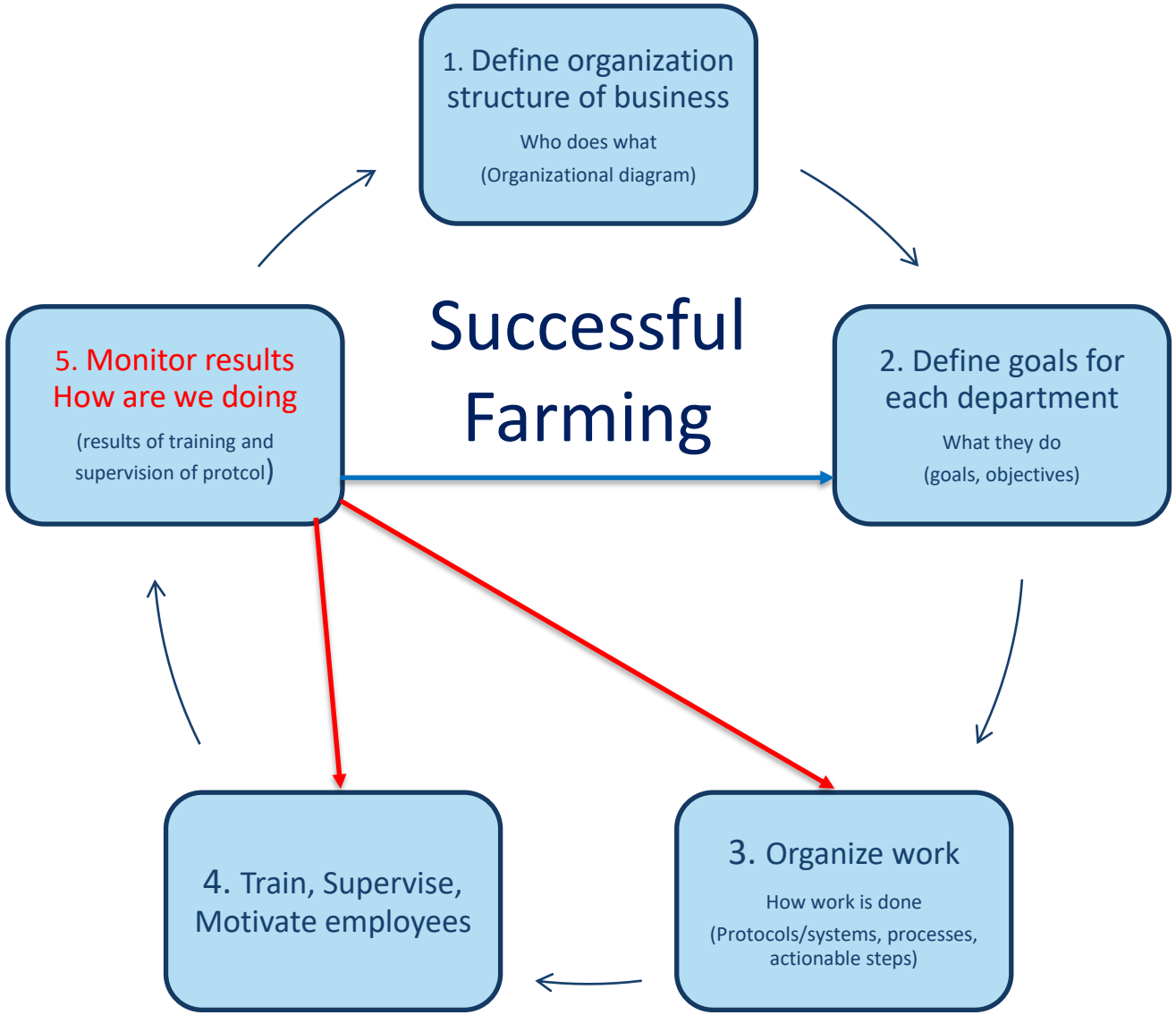
The Management Cycle



From presentation Dr. Tom Fuhrmann

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MANAGEMENT

SYSTEMS ..... **(How the work should be done)**

that are in control

PEOPLE .....

that implement systems correctly **(Workers)**

MONITORING... **(Results)**

to assure that both people and systems are in control

From presentation Dr. Tom Fuhrmann

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What is my bottleneck

to make more money

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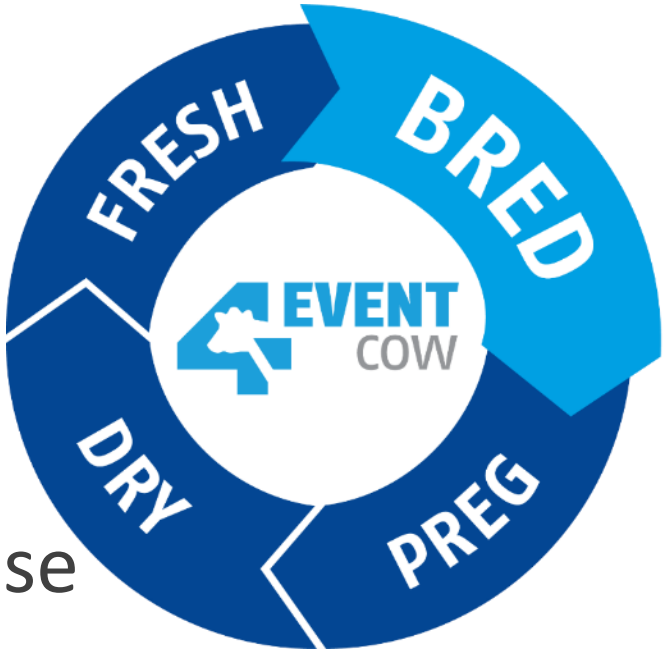
How to improve repro



- Identify key issues that prevent getting cows inseminated correctly
- Understand the physiology behind some of these issues
- Design best strategies to maximize chances for cows to be inseminated only once

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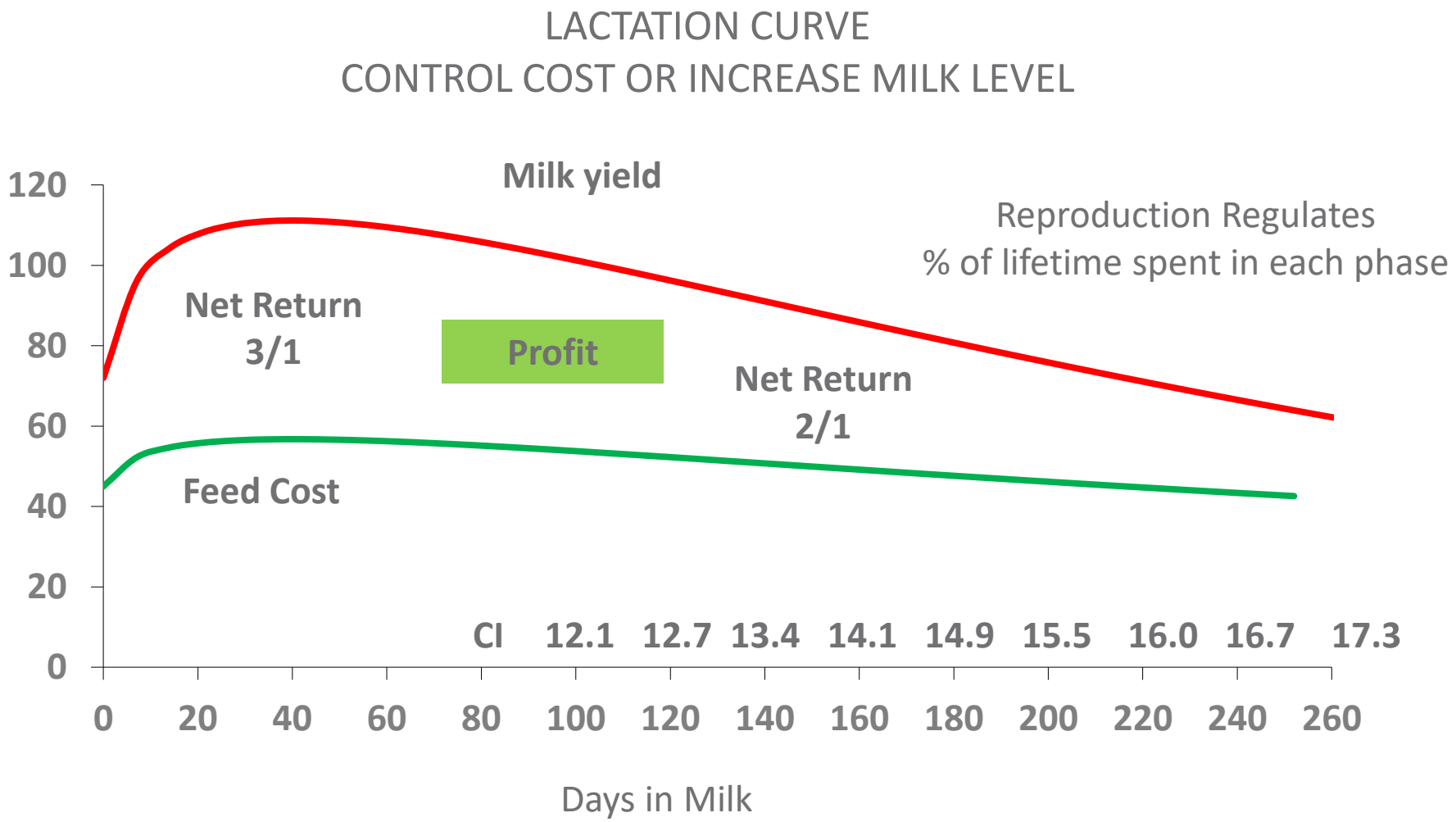
Why is reproduction so important?



Courtesy: Dr. Ricardo Chebel

Dr. Dave Galligan, UPenn

Key things that affect repro

- **Work organization**
- **The repro strategy / system**
- **Dry cow and transition management**
- **Cow comfort** – goal 14 hours/day in bed!
- **Feed** quality, rations, clean water, fresh air.
- **Feeding**; when fed, how often fed, push-ups, bunk space
- **Climate**; avoid heat stress!
- **Feet & leg situation**; prevent lame cows!
- **The floor situation**
- **Cow handling** (stress free)
- **Cow group changes** (avoid stress due to re-grouping)
- **Semen handling**
- **Technician quality**
- **Semen fertility**

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Health Problems in the First 60 DIM in Lactating Dairy Cows

Santos *et al.* (2010)

Resumption of Estrous Cyclicity

Category	Cyclic, %	Adjusted OR (95% CI)	*P*
Healthy	84.1	1.00	---
1 case of disease	80.0	0.97 (0.72 – 1.30)	0.83
> 1 case of disease	70.7	0.60 (0.44 – 0.82)	0.001
Type of health problem			
Calving problem	70.5	0.52 (0.40 – 0.68)	< 0.001
Metritis	63.8	0.37 (0.28 – 0.50)	< 0.001
Clinical endometritis	68.9	0.51 (0.37 – 0.71)	< 0.001
Fever postpartum	80.0	0.55 (0.40 – 0.74)	< 0.001
Mastitis	81.5	0.87 (0.55 – 1.36)	0.53
Clinical ketosis	77.7	0.71 (0.47 – 1.07	0.10
Lameness	85.0	0.82 (0.52 – 1.30)	0.40
Pneumonia	88.9	1.78 (0.22 – 14.34)	0.59
Digestive problem	60.7	0.54 (0.25 – 1.17)	0.12

5,719 postpartum dairy cows evaluated daily for health disorders in seven dairy farms in the US.

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Solutions

- Minimize chances to leave a cow behind
  - Technology to prevent diseases, and to find sick cows earlier

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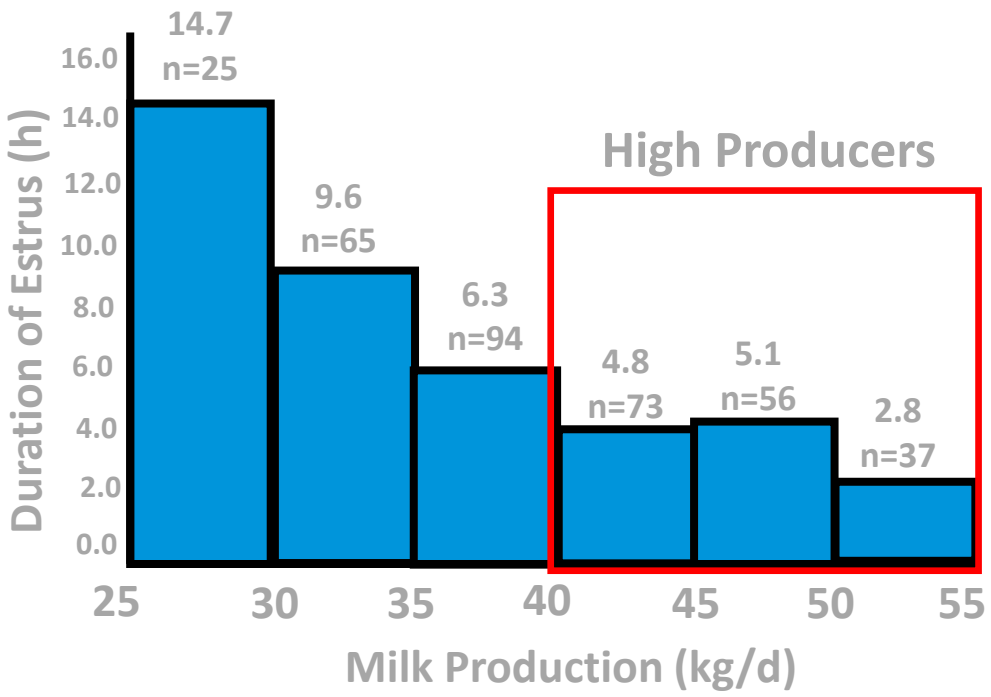
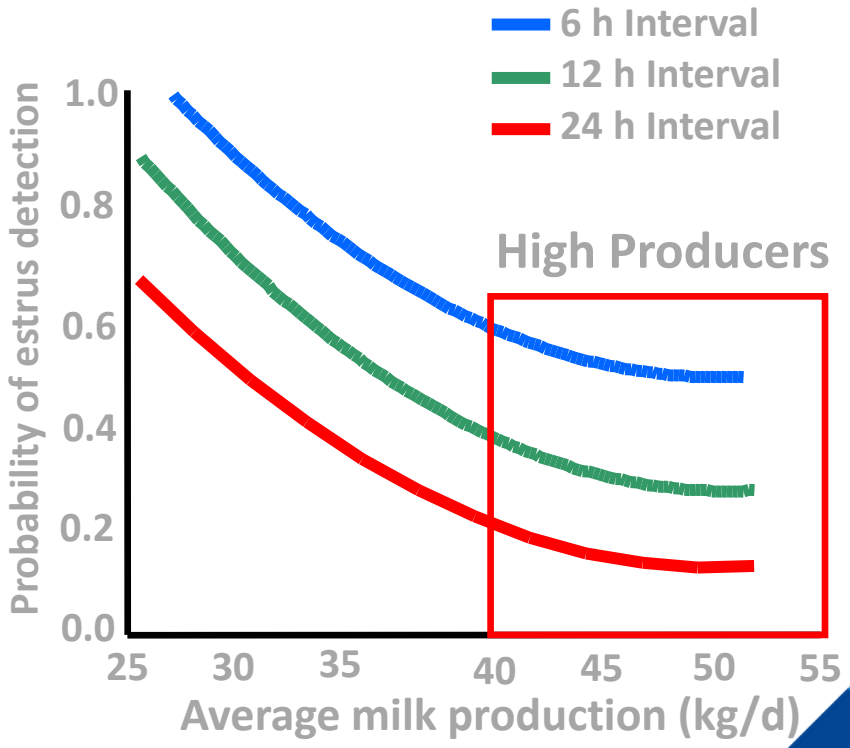
Problems with visual heat detection

Duration of Estrus Related to Milk Production



Estimated Probability of Estrus Detection based on Level of Milk Production



Lopez et al., 2004

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Using technology to detect secondary signs of estrus

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Solutions

- **Minimize chances to leave a cow behind**
  - Technology to prevent diseases, and to find sick cows earlier
  - **Highly skilled, well-trained, motivated labor**

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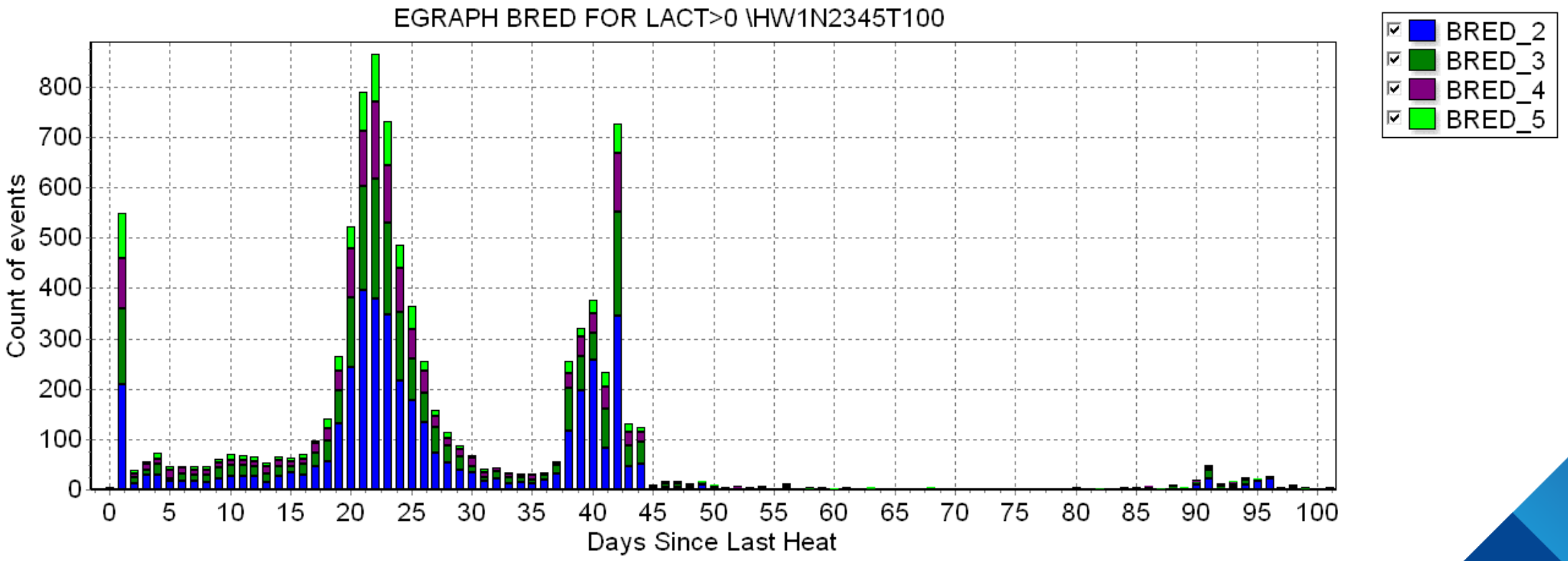
Consistency



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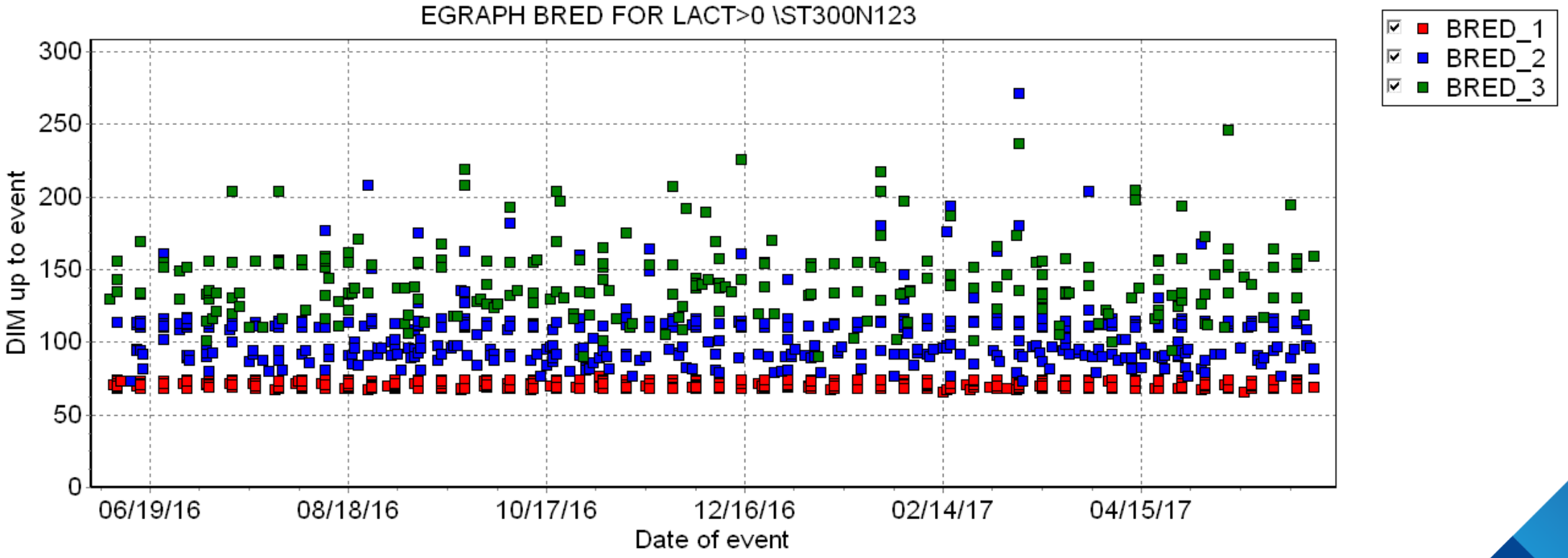
1st service TAI + EDTA + ReSynch



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Solutions

- **Minimize chances to leave a cow behind**
  - Technology to prevent diseases, and to find sick cows earlier
  - Highly skilled, well-trained, motivated labor
  - **Robust software**

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Solutions summary

- **Minimize chances to leave a cow behind**
  - **Technology** to prevent diseases to happen and to find sick cows earlier
  - **High skilled, well-trained, motivated labor**
  - **Adequate equipment**
  - **Robust software** to guide workers and to monitor results

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How are genetics expressed in my herd?

235 1st lactation cows	Bottom	Top
Sire **P**roductive **L**ife	0,5	3,6
# Cows	115	120

Health Event	Bottom	Top
Aborted	16	3
Do Not Breed	15	0
Sold	25	5
Died	3	0
Mastitis	26	10
Retained Placenta	3	5
Displaced Abomasum	1	0
Pneumonia	6	3
Treatment	11	0
Infused	14	7
Footrot	3	0
Sum	123	33

Essential to do is accurate health event registrations!!

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We want to be ready, no surprises!

5. THE FUTURE

Discussions in the industry

- How to Reduce the environmental footprint of dairy farming and help farmers optimize costs and increase average milk yield?
- Potential of digitalization for the entire chain
- ICT technologies such as sensors, wireless communication, software programming, and artificial intelligence
- Sensors for monitoring the reproduction activity, health status, feeding, and AMS
- How can Big Data become Smart Data?

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vas

DATA BASED MANAGEMENT
Connecting Farm Management to Data

PRO
PE
Global Dev
and Sustain

ALTHY
OIL
ting and
ement


Success is depending on the choices you make!
Good to Great - Jim Collins
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Quotes from VAS executives

Jordan Kraft Lambert, VP Business Development

- **Our approach to sustainability is to provide producers with radical visibility and seamless follow through on their operations**.
- **We hunt down every decision that a producer makes, present data that helps them make a great choice from both a profitability and a sustainability standpoint** and **provide software that operationalizes that decision on their farms**.

Robin Dunki Jacobs, CEO

- The **digital revolution** will help producers **reduce their labor force** while **providing consumers with products that are verifiable in alignment with their values.**

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