THE GLOBAL STANDARD
FOR LIVESTOCK DATA

Network. Guidelines. Certification.

ICAR Sustainability Task Force Montreal May 2022

Tone Roalkvam, TINE, Norway

Ben Bartlett, NMR, UK

4-7-2022

Activities

- Terms of Reference for ICAR Sustainability Task Force was appointed by the board 31. august 2021

  Chair appointed by the board; Tone Roalkvam, Norway

  Group of 11 members + Martin Burke, secretary
- Provide a definition of Sustainability in the context of livestock an animal recording
- TFS has worked with a structure and a road map – an overview on sustainability traits related to animal recording, a list of 35-40 traits
- Collaboration with international partners
- Next step

Sustainability TF Members

Tone Roalkvam, Specialist Advisor Sustainability at Tine SA, Norway, and ICAR Board Member **(Chair)**
Martin Burke, CE ICAR **(Secretary)**
Ben Bartlett, NMR Group Business Development Manager and Director, NMR UK
Henrique Trindade, Assoc. Professor, Department of Agronomy - School of Agriculture & Veterinary Sciences UTAD Portugal
Filippo Miglior, Senior Advisor & Chief, Research & Strategic Development, Lactanet Canada
Fabian Bernal, Global Head of Sustainability DeLaval Group, Sweden
Corina van Middelaar, Scientist, Animal Production Systems group Wageningen University, the Netherlands, (WUR)
Stefan Hortenhuber University Assistant and Senior Researcher at Division of Livestock Sciences NUWI Vienna Austria
Beat Bapst, Geneticist Qualitas AG also CEO Swiss Association for Animal Sciences, SAAS/SVT (part time position) Switzerland
Robert Fourdraine Asst Director, Dairy Record Management Systems, USA
Christa Egger Danner - Chair ICAR Functional Traits Working Group
Birgit Grendl-Gredler – CoChair ICAR 'Feed & Gas' Working Group

ICAR´s definition on sustainability

Sustainable agriculture is the efficient, long term production of safe, high-quality agricultural product, in a way that protects and improves the natural environment, the social and economic conditions of the farmers, their employees and local communities, and safeguards the health and welfare of all farmed species

Definition Reference: https://saiplatform.org/

SAI Platform — Sustainable Agriculture Initiative Platform

SAI Platform is an organisation created by the food industry to communicate and to actively support the development of sustainable agriculture involving stakeholders of the food chain.

Focus for the ICAR sustainability task force

- Structure and roadmap

- List of 35-40 traits that are a part of the animal recording
  - Milkproduction
  - Reproduction
  - Udder health
  - Metabolic diseases
  - Claw health
  - Welfare
  - Feed Efficiency
  - Genetics

- “Impact and ease” (see appendix and ICAR web)

Focus for the ICAR sustainability task force II

Recording Traits that make up Sustainability Indices

•The STF have discussed how various ICAR Members have developed a Sustainability Index in their own organisations (some nationally)

• The STF see that ICAR's role is not to standardise the make-up of Sustainability Indices. The weighting of the various traits is a matter for the members/countries themselves to decide.

- **The STF see ICAR's role is to**
  - ✓ **identify the key traits in recording that effect sustainability**
  - ✓ **provide definitions of these key traits**
  - ✓ **harmonise measurement methods of these key traits**

Focus for the ICAR sustainability task force III

Collaboration with International Partners

- The STF recommend ICAR to develop MOUs or Agreements with other relevant international organisations like IDF, OIE, Global Dairy Platform, FAO etc. who all have Sustainability programs.

- The STF urged ICAR to again focus on our core aspects of animal recording when it comes to identifying our role with such organisations.

	Global Environmental issues per kg milk	Local Environmental issues per ha	Animal Health and Welfare	Socio-economic performance of the farm	IMPACT	EASE
Rolling Herd Average Energy Corrected Milk (i.e. milk, fat and protein) AVG	4.3	4.0	3.0	4.0	15.3	3.7
Age at first calving (calf and heifer raising) AVG	3.0	2.0	3.5	3.5	12.0	3.8
Annual average Days in Milk (long days in milk are typically not very good economically) – see also Reproduction/Calving AVG	3.5	3.0	3.0	3.2	12.7	4.2
MUN /Urea rates in milk (High MUN rates points at overfeeding energy (protein) more N in manure) – herd level – see also Metabolism AVG	3.5	4.0	3.0	3.0	13.5	3.8
Average Lactation Number (herd) AVG	4.0		3.0	4.0	14.5	3.8
Production – Beef (to be done later)						
Daily gain AVG	2.5	3.5	3.0	4.0	13.0	2.3
Age at slaughter AVG	2.7	3.3	2.8	3.3	11.9	3.7
Stillbirth and mortality / raising losses	2.5	2.5	2	3		
% of calves born dead (or died within 24 hours) AVG	3.0	2.5	4.0	4.0	13.5	3.6
% of mortality (mortality rates) in young stock till 6 months (excluding stillbirth) AVG	2.5	2.5	4.5	4.0	13.5	3.5
% of mortality (mortality rates) in young animals between 6 months and calving (females) AVG	3.0	3.0	4.5	3.5	14.0	3.6
% Chronic infection rate (% with cows with a SCC twice above a certain level e.g. 200.000) AVG	3.5	3.5	4.0	4.0	15.0	3.4
Fresh Cow Infection Rate (indicated either poor dry cow management of heifer management) above 200.000 at first test day AVG	3.5	3.0	4.0	4.0	14.5	3.5
Dry Cow Cure Rate (Poor cure rates points at poor dry cow program) (last test day above 200.000 and come back below 200.000) (information on selective versus blanket dry treatment information is valuable) AVG	3.0	3.0	3.5	4.0	13.5	3.3
% Cows on Selective Dry Cow Therapy AVG	3.0	3.0	3.0	3.5	12.5	2.3
% of cows with at least one mastitis case within lactation AVG	4.0	3.0	3.5	4.0	14.5	3.0
% of cows culled because of udder health AVG	3.5	3.5	4.0	3.5	14.5	3.0
Metabolic diseases						
Fat-Protein- Ratio first test day (/1- 50/100 days) in lactation <1 and >1,3/1,5 AVG	3.0	2.5	3.0	3.0	11.5	3.6
% of cows with subclinical metabolic issue (ketosis, acidosis, DA's etc (BHB, MIR,...) AVG	3.5	3.5	4.0	4.0	15.0	2.4
Claw health and lameness						
% of lame cows, AVG	3.0	2.5	5.0	4.0	14.5	2.2
% of cows culled because of lameness/claw health reasons AVG	3.5	3.0	4.5	4.0	15.0	3.0
% Cows culled due to other disorders/diseases (Pneumonia, Scour , etc) AVG	2.7	3.0	3.0	3.5	12.2	2.2
% Cows culled < 60 - 100 days in milk AVG	4.0	4.0	4.0	4.5	16.5	3.2
Welfare – additional to the already mentioned health related traits (health, BCS, lameness, claw health)??? Objective measures here??						
BCS	2.0	2.0	3.5	3.0	10.5	2.0
Genetics:						
Cow EBV worth e.g NM$ In US we use NM$ to measure genetic progress, Higher NM$ cows would point at genetically superior animals) -including Genomics AVG	3.5	3.0	3.0	3.0	12.5	3.0
Sire EBV worth NM$ AVG	3.5	3.5	3.0	3.0	13.0	3.5
any genetic/genomic index (NM$, TPI, LPI, Pro$, or other national indexes worldwide) for all animals in herd including new born (based on GPA)- -including Genomics AVG	3.5	4.0	3.0	3.5	14.0	2.7

Global environmental issues per kg milk

Local environmental issues per ha

Animal health and welfare

Socio-economic performance of the farm

Impact

Ease

List of Key Sustainability Traits can be seen at https://www.icar.org/index.php/technical-bodies/task-forces/sustainability-task-force/

Next steps

- As this Task Force has made its report and recommendations we will now wind up this phase
- Phase II – put together small focus group made up from selected relevant ICAR Group members
- Work to provide Standard Definitions of the key Milk Recording Traits
- Provide a standard comparable reference on How to Measure
- Consequences for the Guidelines
- Timeline to complete by Toledo 2023

ICAR Sustainability Task Force briefing:

02 June 2022
Montreal

Ben Bartlett
NMR Business Development Director
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Introduction:
Why the interest

- UK Dairy Industry Roadmap – commitments made at COP26
  - Net zero CO2 at least by 2050
  - Methane – sustained reduction evidenced by data
  - Flourinated gases to be eliminated with switch towards natural refrigerants
- Focus on Scope 3 emissions – supply chain management

What role for NMR?

Adoption of sustainability traits: Lessons from a UK case study

- Laboratories
- Data processing centre
- Head office
- Transport hub

NMR Locations

www.nmr.co.uk

Market context:
The processor perspective

THE 5 MOST EFFECTIVE CLIMATE ACTIONS ON FARM

More milk per feed

A cow's feed has a big influence on how much milk it produces. If farmers manage to maximise the milk per feed ratio and minimise feed waste, the milk will be more climate efficient.

Feeding precise protein amounts

Cows need protein to stay healthy and produce milk but, like humans, cows excrete unnecessary protein. Carefully measuring feed with the right protein levels means less nitrogen, a greenhouse gas, in the manure.

Healthy and happy cows

Cows that live a long and healthy life will produce more milk over their lifetime. A longer lifespan means the cow produces milk for a larger part of her life, which improves climate efficiency.

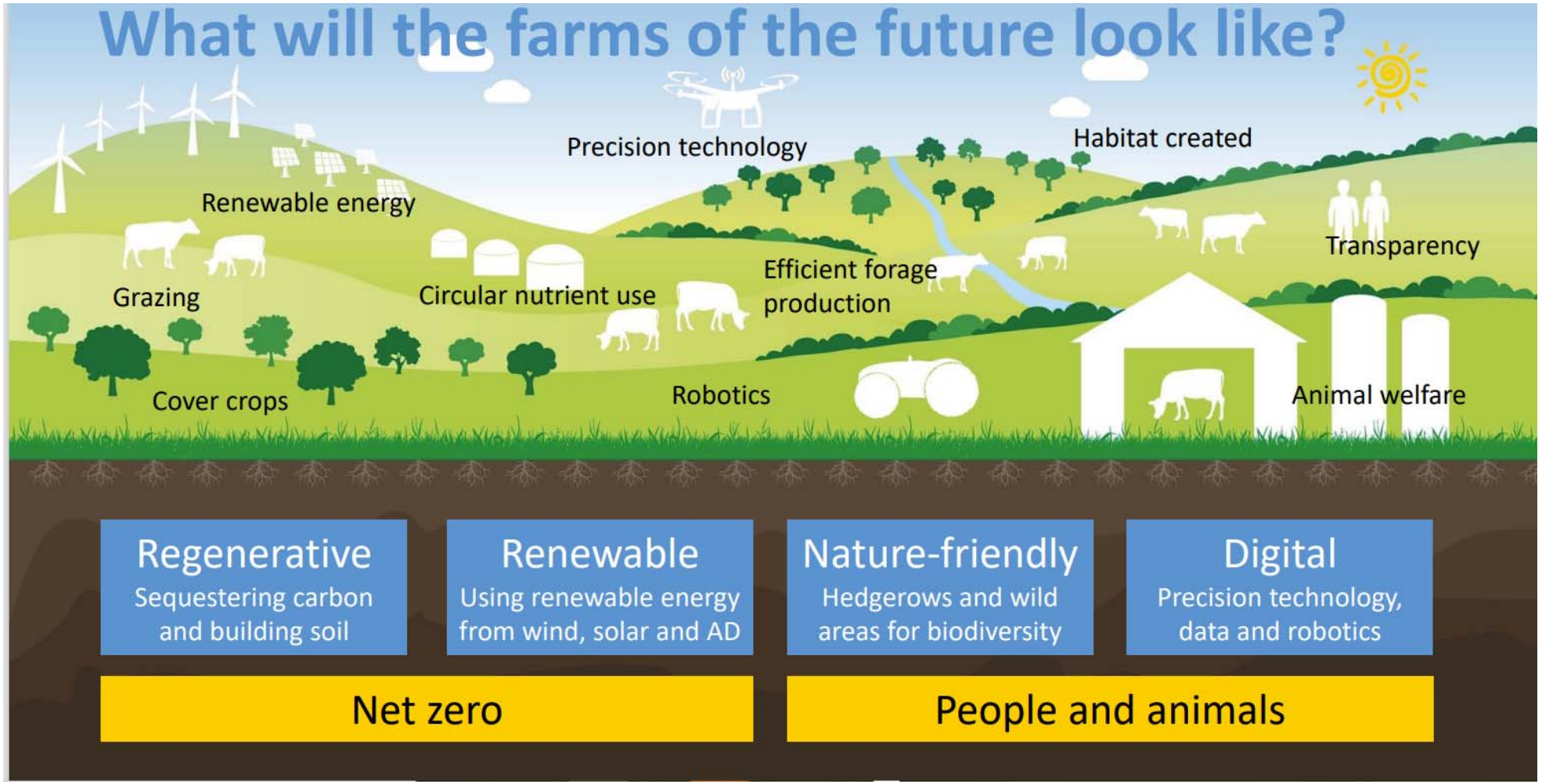
Just the right amount of fertiliser

Crops grow better if they're fertilised, but fertilisers emits greenhouse gasses. So, matching precisely the amount of fertiliser with the plants' needs and using different methods to spread the muck can improve the yield per carbon emissions ratio.

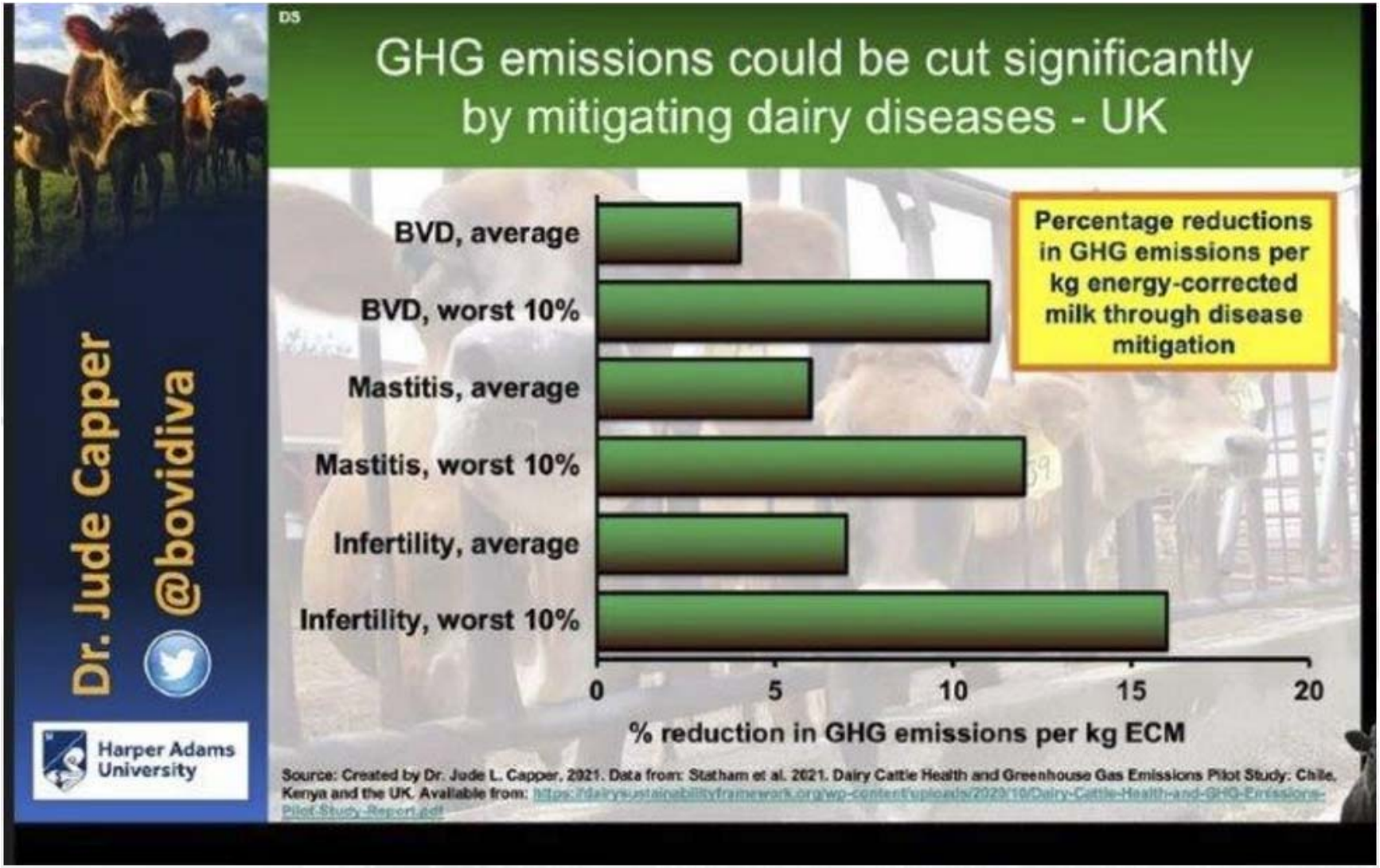
Better feed crop yield

A lot of our farmer owners produce feed for their cows, which is great, because imported feed – for example soy from South America – carries a higher carbon footprint. However, feed yield can also be optimised to increase climate efficiency.

Source: Arla Foods

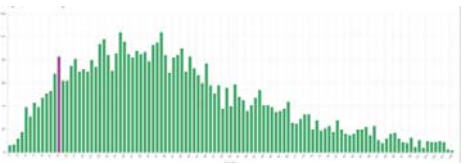

What will the farms of the future look like?
Precision technology
Habitat created
Renewable energy
Transparency
Efficient forage production
Grazing
Circular nutrient use
Cover crops
Robotics
Animal welfare
Regenerative
Sequestering carbon and building soil
Renewable
Using renewable energy from wind, solar and AD
Nature-friendly
Hedgerows and wild areas for biodiversity
Digital
Precision technology, data and robotics
Net zero
People and animals

Animal health and fertility impact on emissions



Our priorities

- Trusted data
- Avoid additional farmer data entry
- Use measures that are already recognised
- Provide benchmarking – over time and against peers
- Focus on third parties
- Avoid confusion with carbon footprinting
- Be versatile in data provision



SHOW LEADERSHIP

Progress so far

- ✓List of indexes established
  - ✓Inclusion of infectious disease status - MAP
- ✓Prototype reports developed – use of PowerBI
- ✓Third party engagement
  - ✓Retailers
  - ✓Processors
  - ✓Feed companies
  - ✓Vet practices

NMR Sustainability Performance Index Parameters

Health	Full Name
Prev Score	Johnes Prevalence
SCC	Average SCC value
% Cull	Culling rate
% Dead	Culling rate (100 days)

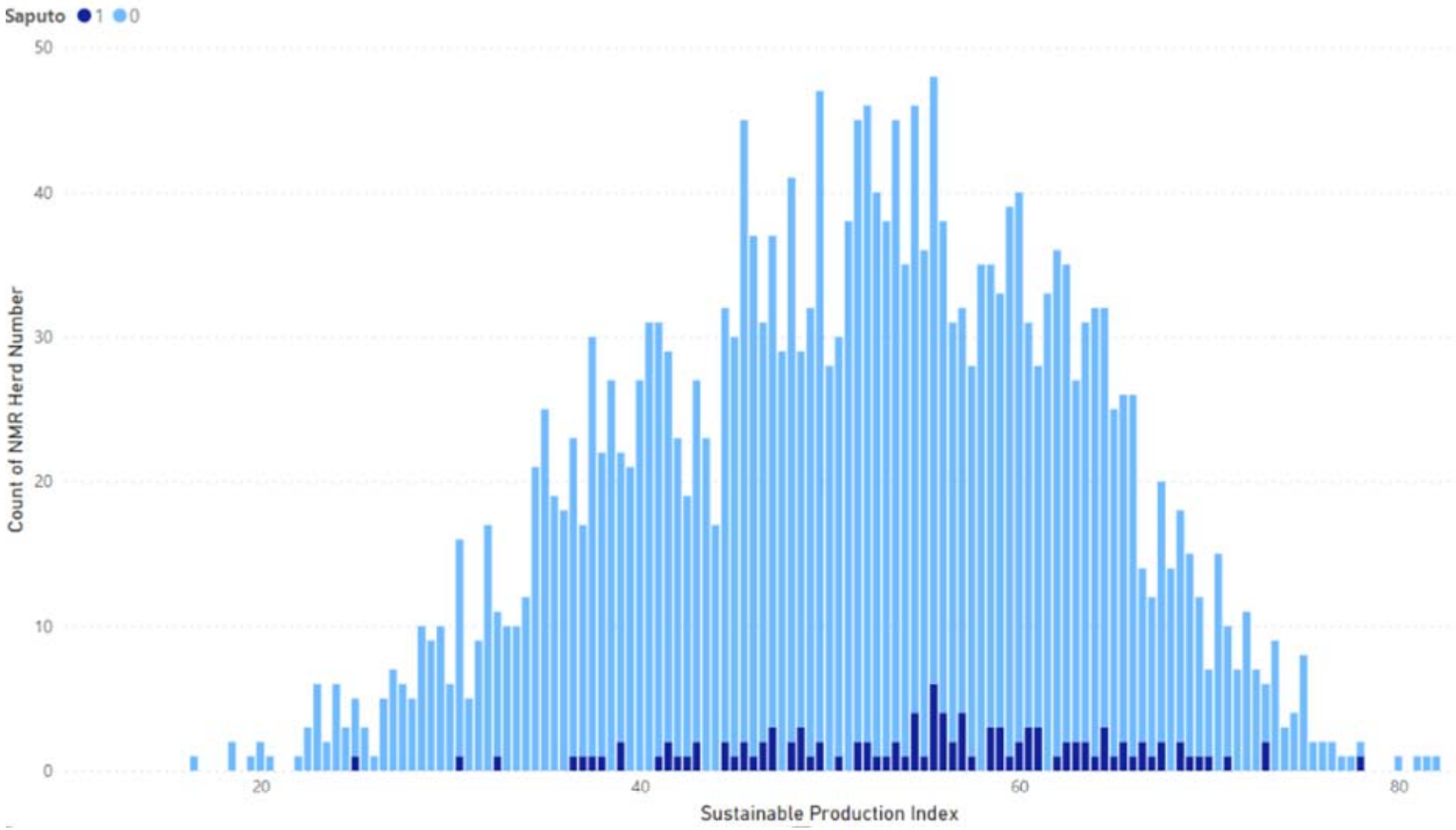
Fertility	Full Name
AgeC1	Age at first calving
PCLact1	% of cows in 1st lactation
Preg100	% cows pregnant at 100days
Calving int	Calving internal

Production	Full Name
Ave Lact Yld	Lactation Yield
Fat	Average fat %
Prot	Average protein %
Fat/Cow/Yr	Weight of fat produced per year

Genomic	Full Name
PLI	Average PLI of cows
PLI Progress	Rate of PLI improvement
Healthycow	Ave Healthy Cow PTA
Fertility	Ave Fertility cow PTA

Nutrition	Full Name
Low Energy	Energy balance low energy
FatProt	Fat Protein ratio of bulk samples
Urea	% of optimum Urea values
Denovo	Ratio of short-chain fatty acids

Benchmarking: A processor milk pool .v. total NMR



Herd level data for a milk pool

NMR_herd_number	Sustainability Index	Index Fertility	Index Genomic	Index Health	Index Nutrition	Index Production
105381202	78	14.5	18	13	16.5	16
097746901	75	16.5	18	10.5	13.5	16.5
098844101	73.5	14	17	12.5	16.5	13.5
107667101	73	14	18	11.5	12	17.5
109319401	73	15	15	8	17	18
098844401	72.5	12.5	16.5	12	18	13.5
098826201	71	13.5	18	12	16.5	11
098844601	71	13.5	16	14.5	14.5	12.5
109243001	45	7	11.5	5.5	12	9
097808801	44.5	8.5	8.5	8	9.5	10
097847307	44.5	12	5.5	4.5	13	9.5
098066901	44.5	13	6.5	5	14	6
098084806	44.5	13	3	9	11	8.5
098145801	44.5	8.5	1	9	13.5	12.5
106607804	44.5	9.5	9.5	9.5	10.5	5.5
109713501	44.5	7	8.5	10	8	11

Progress so far

- ✓List of indexes established
  - ✓Inclusion of infectious disease status - MAP
- ✓Prototype reports developed – use of PowerBI
- ✓Third party engagement

"The NMR SPI data provides a valuable overview of the performance of our milk pool. We will use this data to identify relative strengths and weaknesses across the milk pool and help the pool continue to progress in the fulfilment of their sustainability objectives. Given the importance of measuring progress through trusted data, we will encourage those not recording to do so"

Dugdale Nutrition

Lessons from the UK case study

- There is plenty of interest from stakeholders
- Stakeholder engagement is as important as design of the service offering
- The UK industry is looking for leadership in this field – what data to use and how to receive it and what should farmers be aiming for

Summary

- There is scope for MRO's to strengthen their position in the market through providing outputs that are relevant to the fulfilment of sustainability objectives
- It is up to each MRO to show leadership in introducing information services to help their customers track sustainability progress
- The work done by the ICAR Sustainability Task Force represents an important step in providing a framework for MRO's to work with

"Don't wait for the opportunity – create it"

George Bernard Shaw

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Thank you for your attention!

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