THE GLOBAL STANDARD
FOR LIVESTOCK DATA

Network. Guidelines. Certification.

ICAR Sustainability Task Force II

Toledo May 2023

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20-6-2023

From Montreal to Toledo

- TFS I presented a structure and a road map – an overview on sustainability traits related to animal recording, a list of 35-40 traits

- Next step: TFS II
  - Put together small focus group made up from selected relevant ICAR Group members
  - Work to provide Standard Definitions of the key Animal Recording Traits
  - Provide a standard comparable reference on How to Measure
  - Consequences for the Guidelines
  - Timeline to complete by Toledo 2023

Sustainability Task Force II

Members:

- Tone Roalkvam, TINE, Norway and board, Chair
- Martin Burke, ICAR
- René van der Linde, ICAR
- Birgit Gredler-Grandl, Feed & Gas WG
- Christa Egger Danner, Functional traits WG
- Débora Santschi, Lactanet, Canada
- Robert Fourdraine, Dairy Record Management Systems, USA
- Fabian Bernal, DeLaval Group, Sweden

- Caeli Richardson, BWYPEX

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 I

- Structure and roadmap

- List of 35-40 traits that are a part of the animal recording
  - Milk production
  - 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 I

Recording Traits that make up Sustainability Indices

- The STF 1 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 I

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.

Table of Sustainability Related Traits currently recorded in Member Milk Recording Organisations assessed for Impact & Ease of Implementation

	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	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
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
% Cow[illegible] due to other disorders/diseases (Pneumonia, Scour , etc) AVG	2.7	3.0	3.0	3.5	12.2	2.2
% Cow[illegible] < 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$, TPI, LPI, Pre$, 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/

Sustainability traits 2023

Trait group	Number	Trait
Feeding and production	1	Age at slaughter
Feeding and production	2	Average Days in Milk
Feeding and production	3	Body weight
Feeding and production	4	Daily gain
Feeding and production	5	Energy Corrected Milk
Feeding and production	6	Feed efficiency
Feeding and production	7	Feed Intake
Feeding and production	8	Methane Emissions
Feeding and production	9	MUN /Urea rates in milk
Feeding and production	10	% cows with FPR < 1 at first test day
Feeding and production	11	% cows with FPR >1.3/1.5 at first test day
Feeding and production	12	% cows with functional BCS
Fertility	13	Apparent Pregnancy Loss Rate
Fertility	14	Average Days Open
Fertility	15a	Non-Return Rate 56 days
Fertility	15b	1st Service Conception Rate
Fertility	16	Pregnancy rate
Fertility	17	% of cows culled due to reproductive problems
Fertility	18	% of cows with fertility disorders
Health	19	Average Somatic Cell Count
Health	20	Chronic infection rate
Health	21	Dry Cow Cure Rate
Health	22	Fresh Cow Infection Rate
Health	23	Selective Dry Cow Therapy Rate
Health	24	% Cows culled due to other disorders/diseases
Health	25	% of cows culled because of lameness
Health	26	% of cows culled because of udder health
Health	27	% of cows with subclinical metabolic issue
Health	28	% of cows with mastitis
Health	29	% of lame cows
Longevity and culling	30	Age at culling
Longevity and culling	31	Average Lactation Number
Longevity and culling	32	% Cows died ≤ 60 days in milk
Young stock	33	Age at first calving
Young stock	34	Young stock EBV ranking
Young stock	35	Young stock Sire EBV ranking
Young stock	36	% young stock involuntary culled
Young stock	37	% of calves born dead
Young stock	38	% of calves with diarrhea
Young stock	39	% of calves with respiratory diseases
Young stock	40	% of mortality until 90 days

Definition of Traits Basics

- Should reflect data collected over a 365 day period

- Why?
  - Geography
  - Seasonal calving
  - Environmental impact as it relates to weather
  - Herd size fluctuations

- Considerations for:
  - Snapshot data (for example test day average days in milk)

  VS
  - 365 day counts and percentages (for example % cows culled less then 60 days in milk)

Approach

- For Test day snapshot data:
  - Use weighted test day averages to calculate an annual number
  - Use all test days in the past 365 days

- 365 Day Counts and percentages
  - Address 365 day window population to consider counting
  - Died within first 60 days in milk

    Calving dates < last test date - 60 days

    Calving dates >= last test date – (365+60) days

Average Somatic Cell Count Example

$$\overline{SCC} = \frac{\sum_{i=1}^{n} \sum_{j=1}^{m} \left((SCC * milk\ yield\ (kg))_{ij} \right)}{\sum_{i=1}^{n} \sum_{j=1}^{m} \left(milk\ yield\ (kg)_{ij} \right)}$$

N = number of test days in the past 365 days.
M = number of cows in the milking herd each test day.

The average somatic cell count (SCC) is calculated in two steps.
Step 1: calculate per test day the average SCC and the number of cows with SCC available.

Step 2: take the total of all test days of number of cows * average SCC on each test day and divide this by the sum of all cows on all test days in the past 365 days.

% Cows Culled Due to Lameness Example

$$\%\ cows\ culled_{lameness} = \frac{\sum_{i=1}^{n} cows\ culled_{lameness}}{\frac{\sum_{i=1}^{365}\sum_{j=1}^{m}(cows\ present\ (dry + producing)_{ij})}{365}} * 100$$

The percentage of cows culled because of lameness or other claw health reasons is calculated as:

The number of cows culled in the past 365 days with main culling reason lameness divided by the average number of cows with at least one calving (dry and producing) present in the past 365 days.

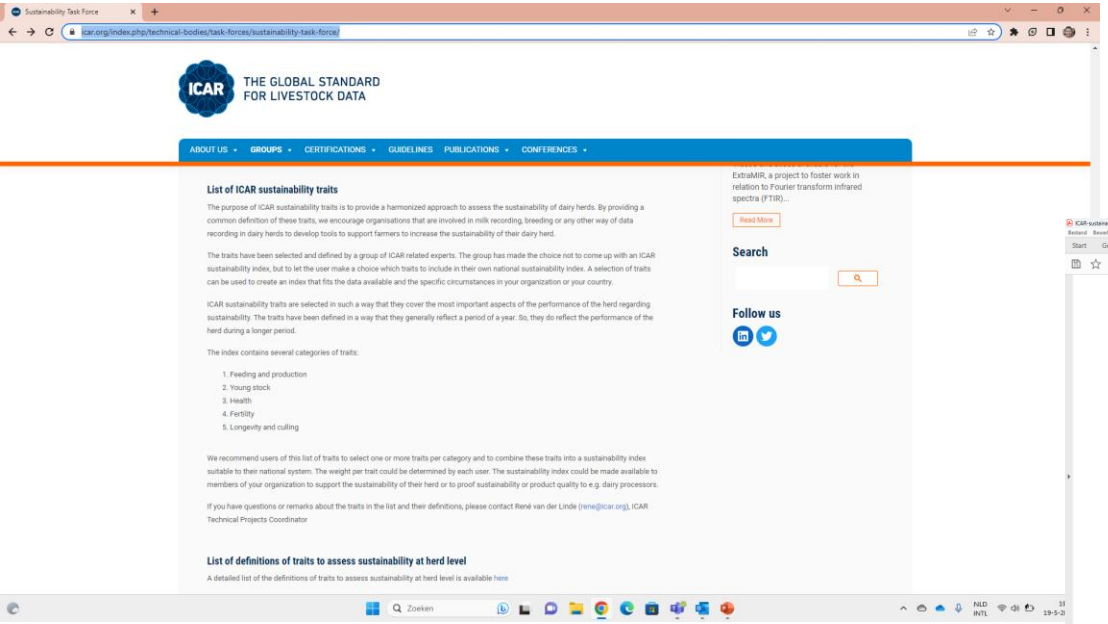
In case of more than one culling reason, lameness should be at least one of the reasons.

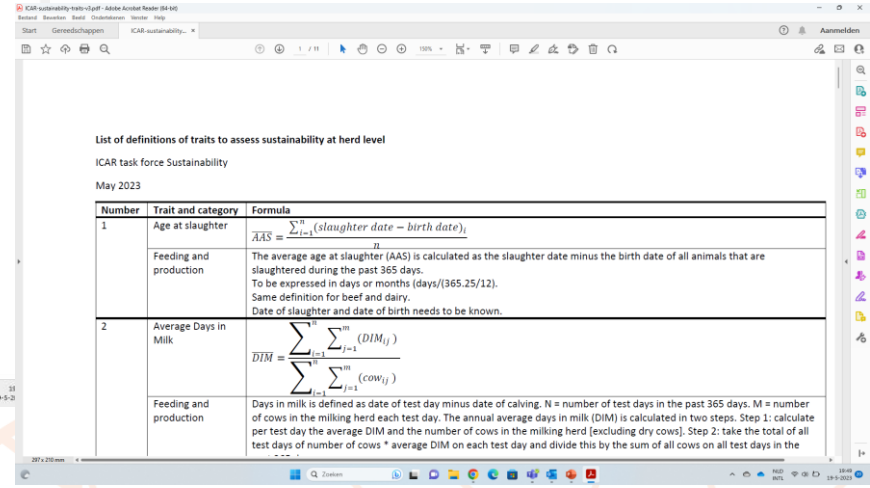
Implementation

- Implementation of work of STF in guidelines:
  - Sustainability chapter with definitions and formulas on herd level (continuous review)

- link with other ICAR groups and international partners; IDF
  - Name group member(s) as “sustainability” representative
  - Engage with international partners on sustainability programs

List of sustainability traits are on ICAR website





ICAR > Homepage > Groups > ICAR Task Forces > Sustainability Task Force
https://www.icar.org/index.php/technical-bodies/task-forces/sustainability-task-force/

Feedback on the list can be send to René van der Linde: rene@icar.org

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Thank you for your attention!

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