



ICAR Conference 2026
Verona, Italy

QIndex

A nationwide welfare index based on DHI and cattle register data

J. Braunleder¹, A. Mensching¹, M. Kammer², F. Grandl^{2,3}, E. Bohlsen⁴, E. Wurm⁵, R. Reents¹

¹ Vereinigte Informationssysteme Tierhaltung w.V. (vit), Verden (Aller)

² LKV Bayern, München

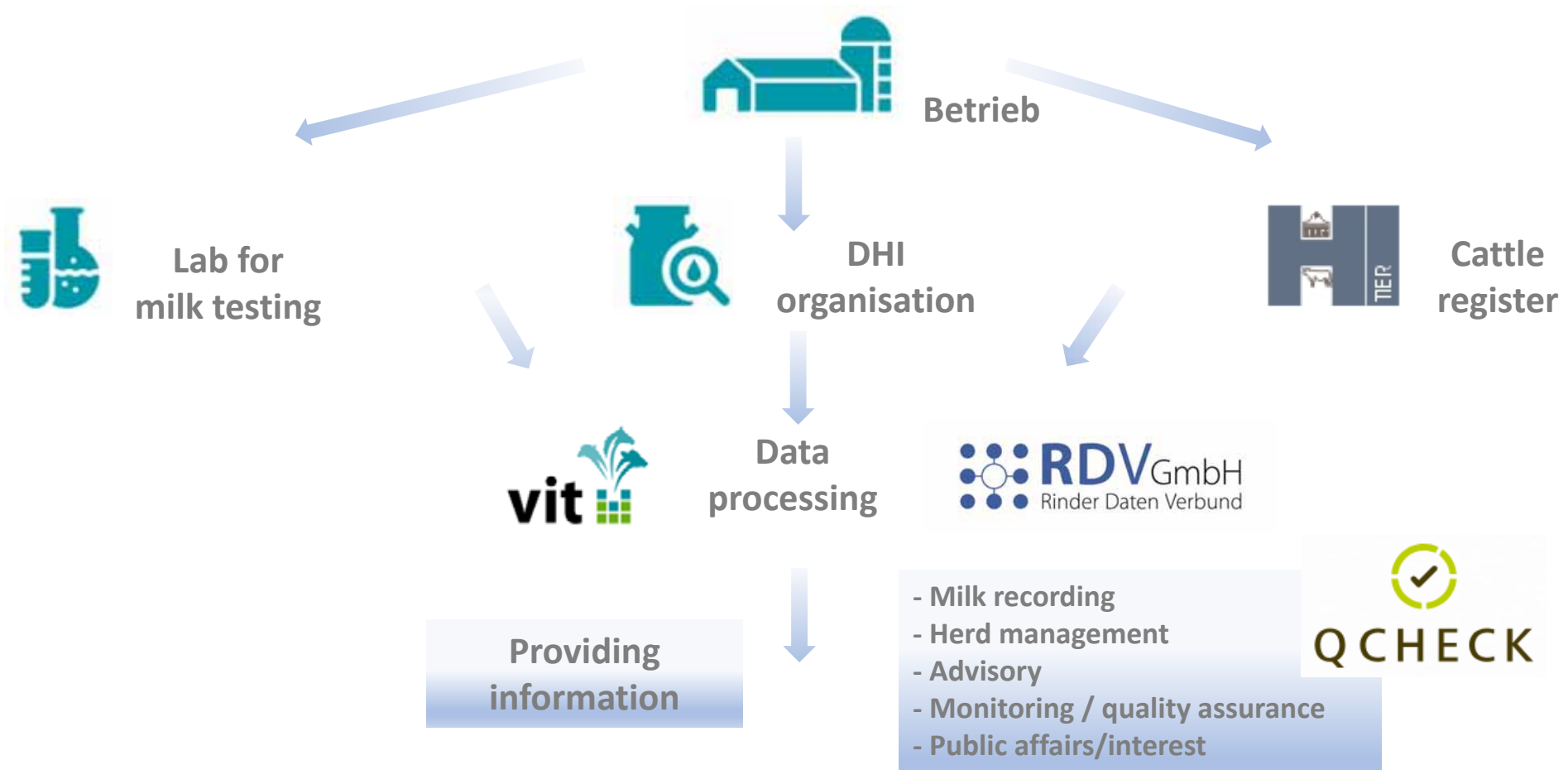
³ RDV GmbH, München

⁴ LKV Niedersachsen, Leer

⁵ BRS, Bonn



QIndex – based on reliable data



Data based on the 16 Q Check indicators

- Existing data from DHI and cattle register are used

Udder health

- Udder-healthy cows[%]
- Cows with significantly increased cell count[%]
- New infection rate in lactation[%]
- First lactating mastitis rate [%]
- Cows with chronic udder disease[%]
- New infection rate in the dry period[%]
- Cure rate in the dry period[%]

Metabolism / digestion

- Proportion of animals with FEQ > 1.5 in early lactation[%]
- Proportion of animals with FEQ < 1.0 in early lactation[%]



Longevity /mortality

- Culling rate [%]
- Productive span of culled cows [Monate]
- Early calf losses in first calves up to day 7 [%]
- Early calf losses in multiparous cows up to day 7 [%]
- Cow mortality [%]
- Calf losses Day 8-28 [%]
- Rearing losses Day 29-180 [%]

- Evaluations on animal welfare for legally required self-monitoring and management on farm
- Essential part of animal welfare monitoring for dairies (certification) and market partners and MRO
- ➔ **Q Check: established animal welfare monitoring from milk recording**



Q Check results and reporting

National Monitoring

- Bundling of data throughout Germany
- Around 30,000 farms in DHI
- More than 2.9 million cows (2025)

→ Annual national monitoring report

Indikator	Warnwert	10%	25%	Median	75%	90%	Zielwert
Anteil eutergesunder Kühe (Milchzellgehalt \leq 100.000/ml)	< 50	43,2	52,8	62,0	69,8	76,2	> 75
Anteil Tiere mit deutlich erhöhtem Zellgehalt (Milchzellgehalt > 15)	> 15	19,4	14,8	10,8	7,5	5,0	< 5
Neuinfektionsrate in der Laktation [%]	> 25	27,8	21,9	16,9	13,1	10,3	< 15
Erstlaktierendenmastitisrate [%]	\geq 30	46,4	34,4	25,0	15,0	3,8	\leq 15
Anteil chronisch kranker Tiere mit schlechten Heilungsaussichten	\geq 5	2,9	1,8	0,9	0,3	0,0	\leq 1
Neuinfektionsrate Trockenperiode [%]	\geq 30	46,2	33,3	23,1	14,3	5,9	\leq 15
Heilungsrate in der Trockenperiode [%]	\leq 50	33,3	46,9	60,0	70,7	80,0	\geq 75
Anteil Tiere mit Fett/Eiweiß-Quotienten \geq 1,5 in den ersten 2 Monaten	\geq 15	22,7	15,5	10,0	6,1	3,8	\leq 10
Anteil Kühe mit Fett/Eiweiß-Quotienten < 1,0 in den ersten 2 Monaten	\geq 15	20,9	14,6	9,1	5,0	2,5	< 5
Merzungs-/Abgangsrate der Kühe [%]	\geq 40	40,5	33,7	27,4	21,5	16,2	\leq 15
Nutzungsdauer der gemerzten Kühe [Monate]	\leq 30	29,2	34,7	41,3	49,5	60,0	\geq 75
Frühe Kälberverluste bei Erstkalbinnen [%]	\geq 10	16,4	10,0	4,8	0,0	0,0	\leq 5
Frühe Kälberverluste bei Mehrkalbinnen bis Tag 7 [%]	\geq 10	12,0	8,2	4,9	2,0	0,0	\leq 5
Kuhmortalität [%]	\geq 5	9,4	6,3	3,7	1,5	0,0	\leq 5
Anteil Kälberverluste Tag 8-28 [%]	\geq 10	4,9	2,5	0,8	0,0	0,0	\leq 5
Anteil Aufzuchtverluste Tag 29-180 [%]	\geq 10	4,8	2,4	0,0	0,0	0,0	\leq 5

BRS, 2026



Q Check Report

- For self-monitoring on farm
- Accurate assessment of animal welfare conditions
- Intra- and inter-farm comparison

→ Interactive applications and reports



LKV Bayern, vit, 2026

- Established animal welfare monitoring from DHI
 - But 16 individual indicators are complex in inter-farm use
- QIndex: summary with the help of sub-indices

Idea behind QIndex

- Comparative assessment and ranking of dairy farms
- Observation and analysis of key indicators over time
- Opportunity for farms to evaluate themselves independently

Animal welfare
on farm

Audit frequency of farms

"worse" key figures



"better" key figures

Audit frequency

- Poor index values indicate need for advice = more frequent on-site audits
- Good index values indicate good animal welfare = fewer on-site audits
- ➔ **QIndex: possible reduction of audit frequency in quality assurance systems**



Concept of index construction

Q Check indicators from three indicator groups

Udder health (EGH)

Metabolism / digestion (SWV)

Logevity / mortality (NDM)

Subindex by indicator group

EGH-Subindex

SWV-Subindex

NDM-Subindex

conversion & evaluation into percentile ranks [0, 100]

Overall index

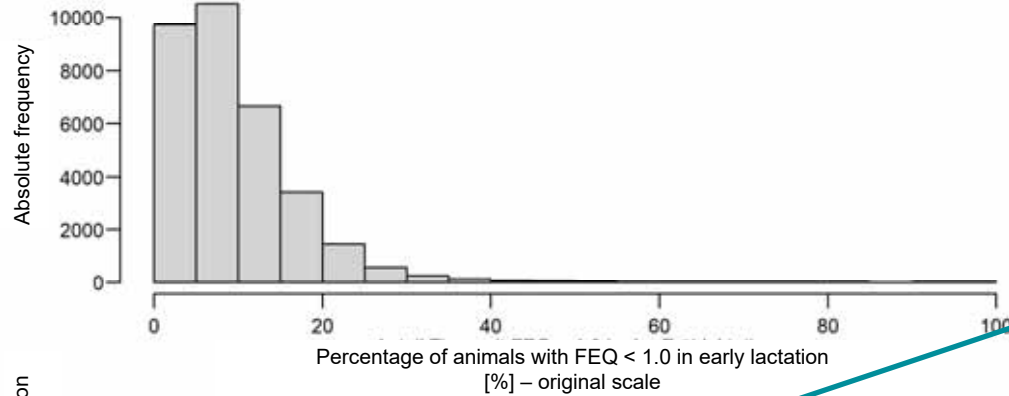
QIndex

→ Construction of the indices: the larger the index, the better

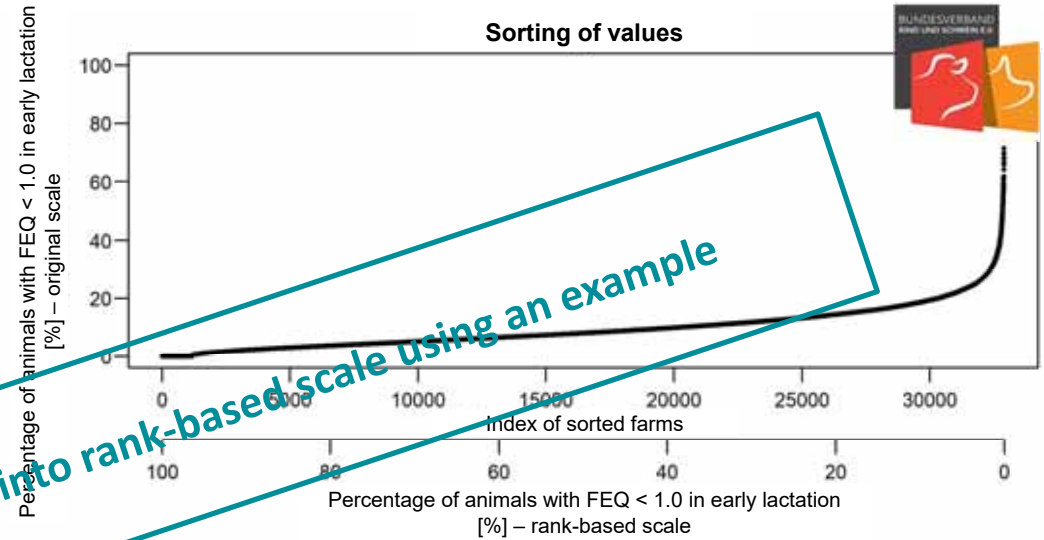


Index construction

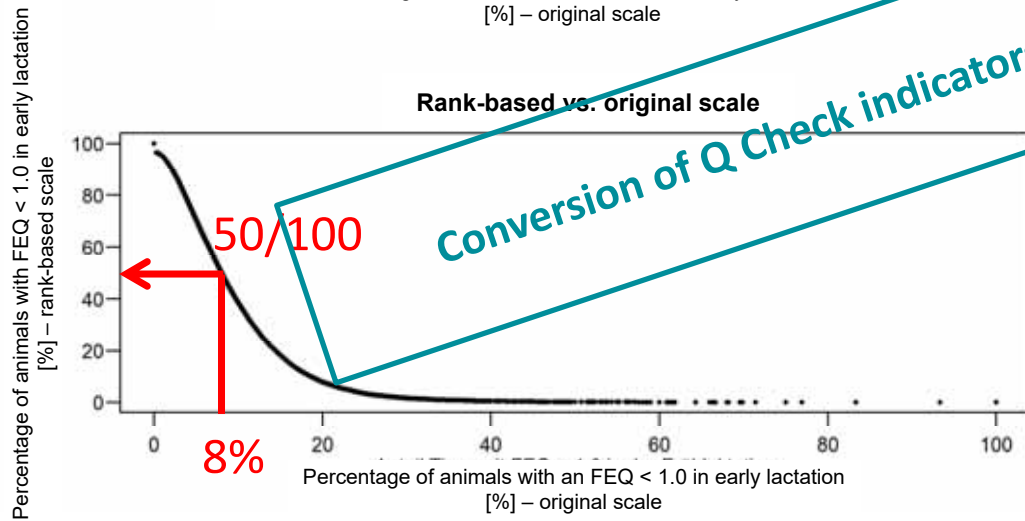
Distribution: Original scale



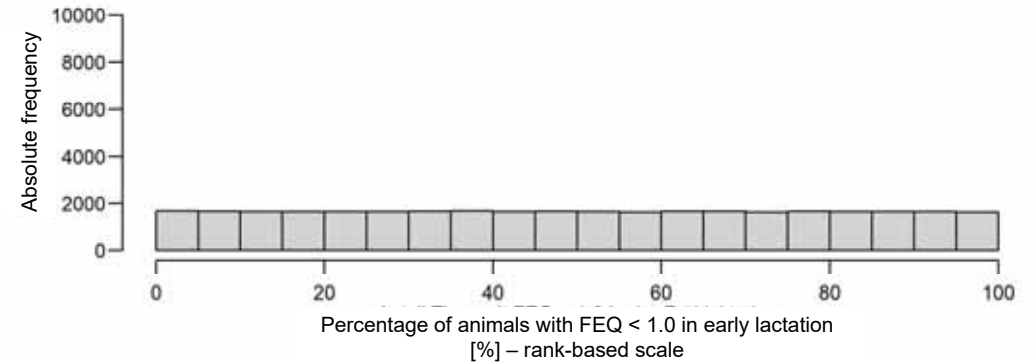
Sorting of values



Rank-based vs. original scale



Distribution: Rank-based scale

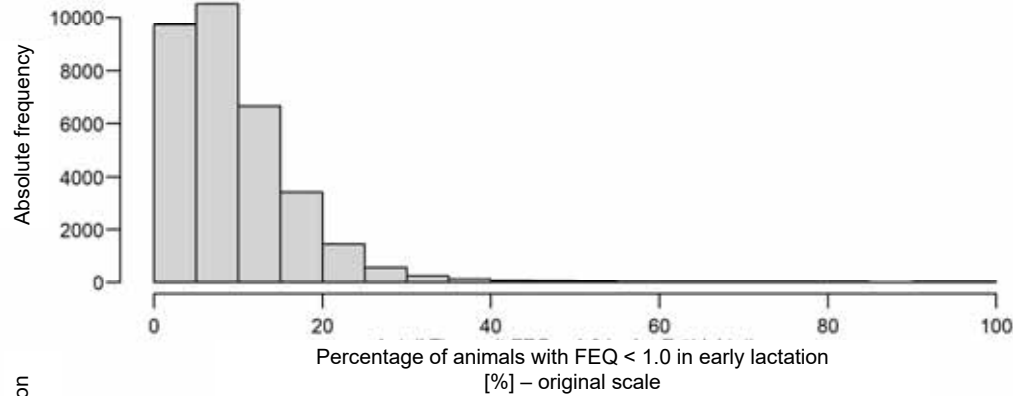


Conversion of Q Check indicators into rank-based scale using an example

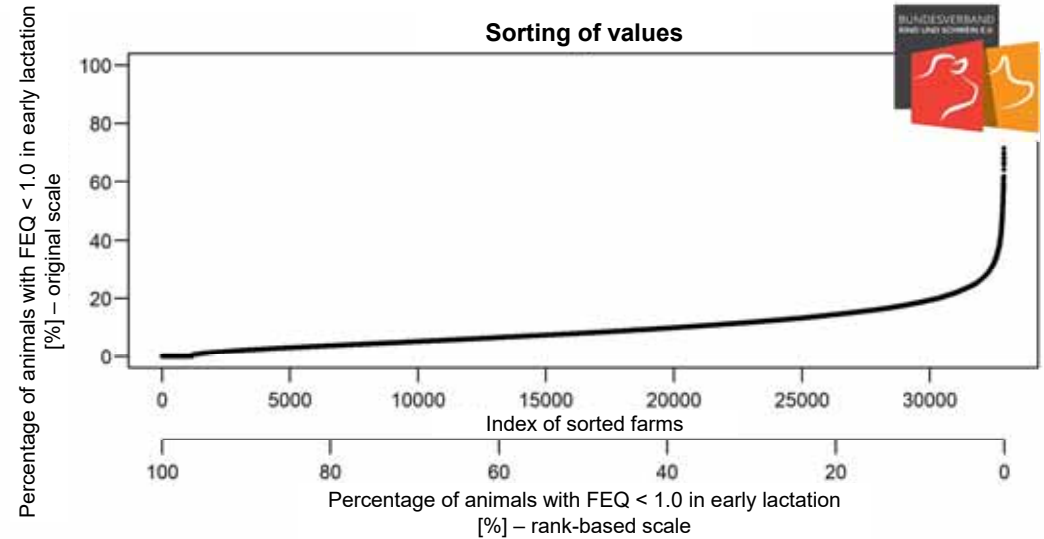


Index construction

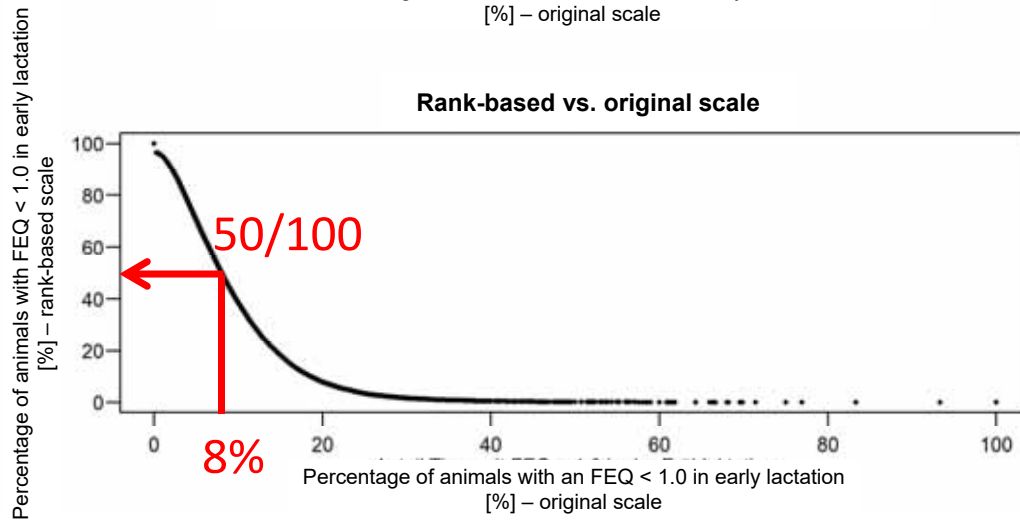
Distribution: Original scale



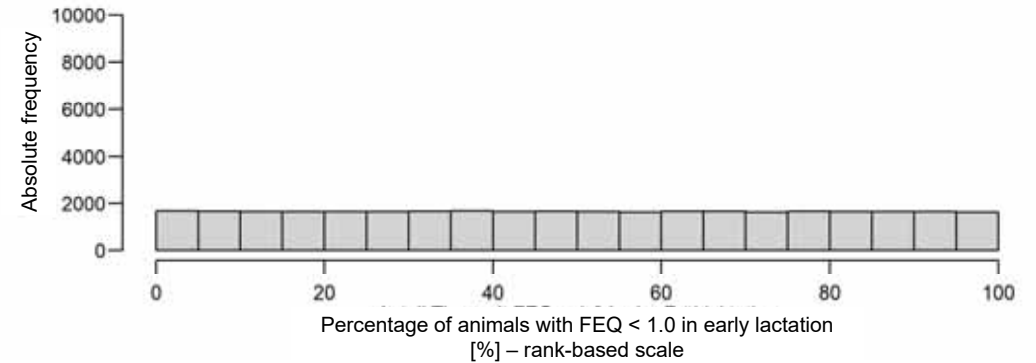
Sorting of values



Rank-based vs. original scale



Distribution: Rank-based scale



Example for index calculation

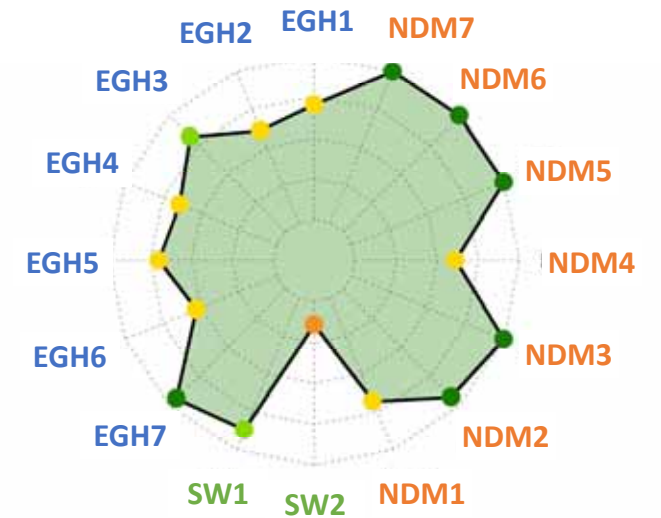
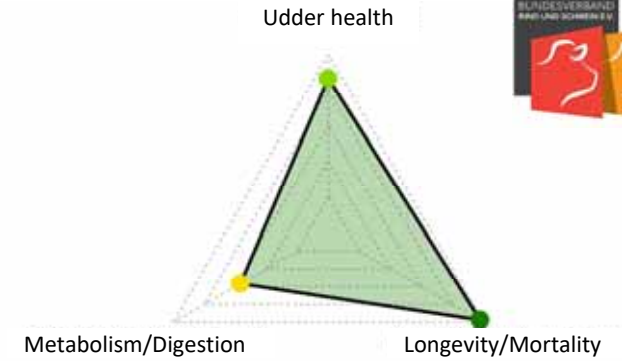
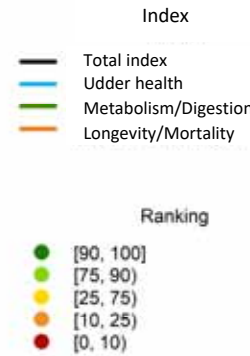
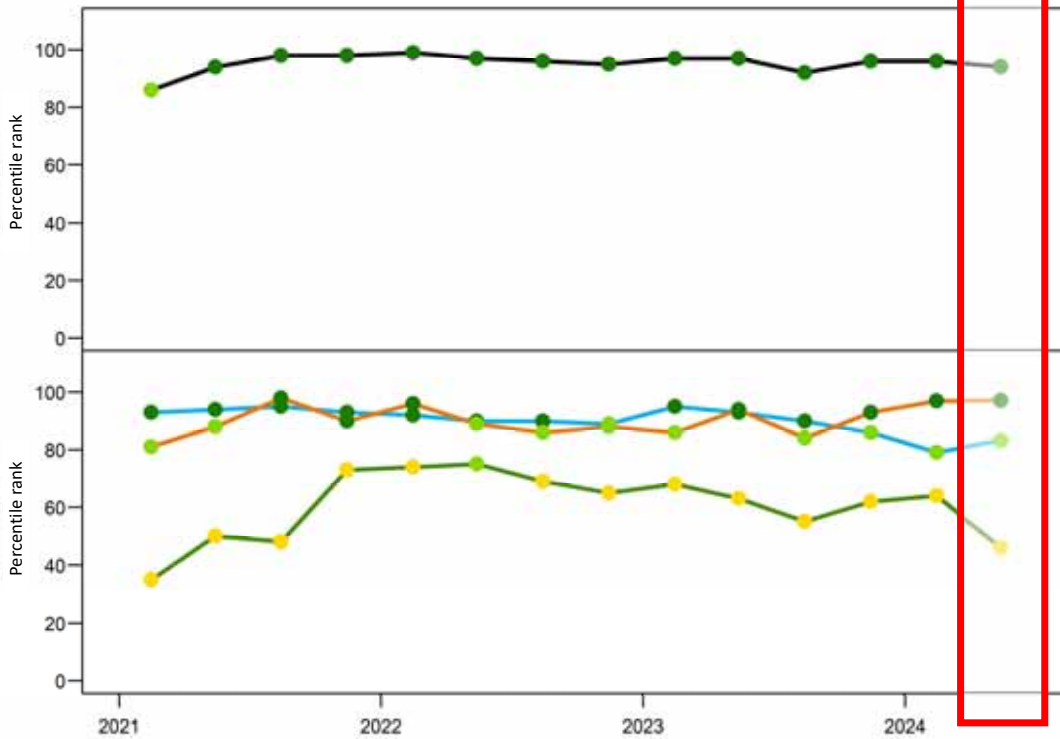


	Q Check indicators															
	Udder health							Metabolism / digestion		Longevity / mortality						
Scale	EGH1	EGH2	EGH3	EGH4	EGH5	EGH6	EGH7	SWV1	SWV2	NDM1	NDM2	NDM3	NDM4	NDM5	NDM6	NDM7
Original scale	75,81	8,06	11,94	12,77	1,22	11,76	71,43	8,39	4,36	24,71	44,12	0,00	2,15	0,71	1,44	0,00
Rank-based with a fixed reference base	92,5	72,4	86,6	82,3	37,7	79,8	75,3	64,6	75,0	62,8	64,0	100,0	74,4	77,9	40,2	100,0
	Indicator Groups Sub-Indices															
Ø Rank per indicator group	75,23							69,80		74,19						
Rank-based with a fixed reference base	87							90		86						
	Overall index															
Ø Rank above the three groups	73,07															
Rank-based with a fixed reference base	98															

Examples for differentiation of indices

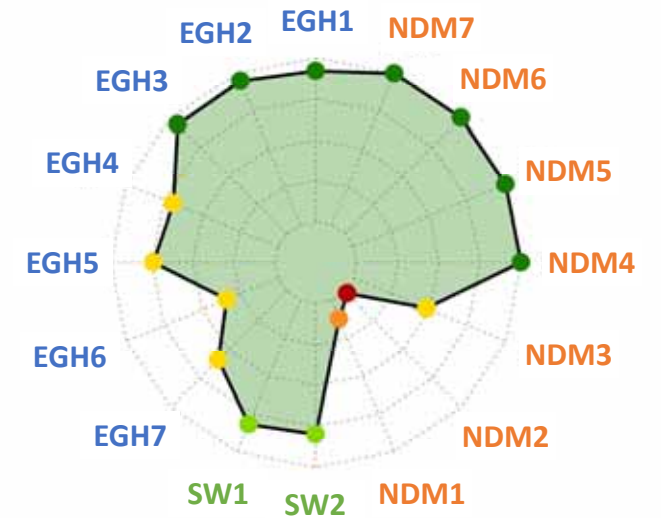
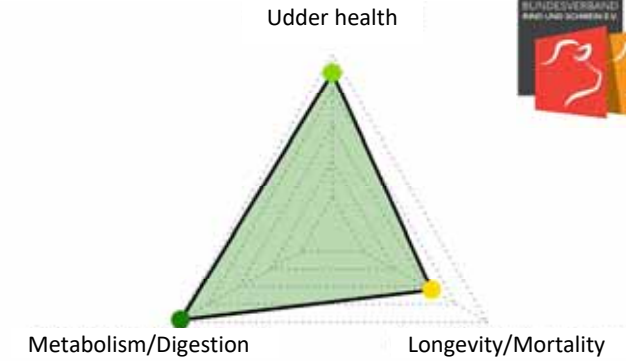
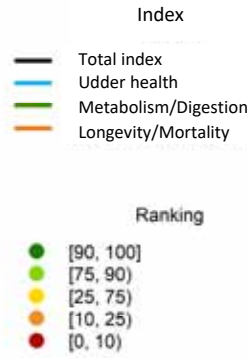
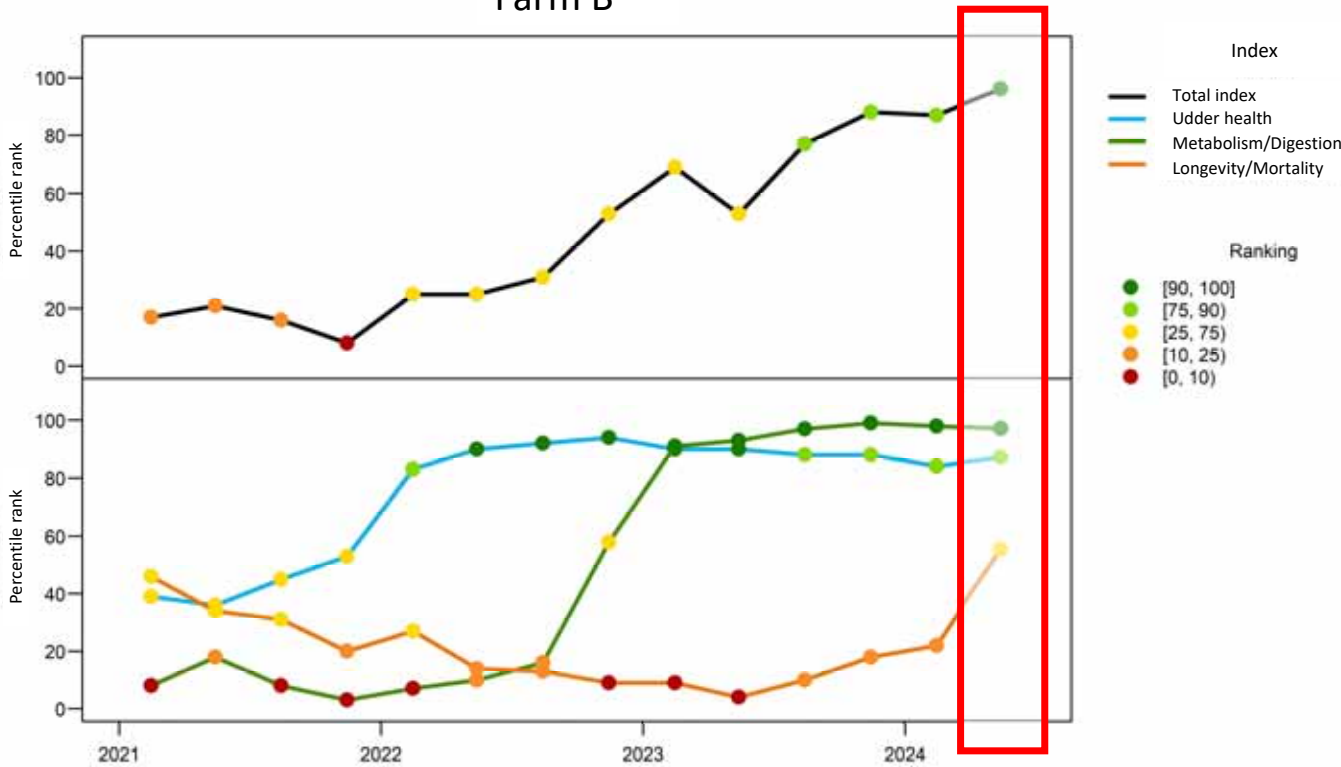


Farm A



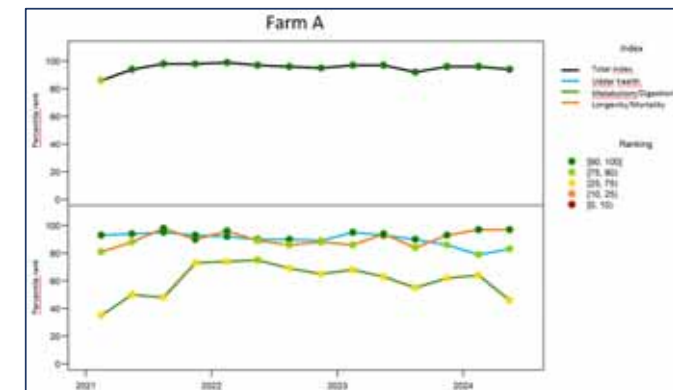
Examples for differentiation of indices

Farm B



Rank-based hierarchical index construction

- Based on all 16 animal welfare indicators from the MLP / Q Check
- Three sub-indices summarise the situation in the three indicator groups well
- Robustness through ranking
- Fixed reference point
- Good differentiation as well for overall and for sub-indices
 - Between farms and within a farm over time is possible
 - Clear, quick and easy classification and visualization



- accurate assessment of the animal welfare situation on farm by using the indices
- Information for a more detailed analysis on farm is already required and available
- ➔ **QIndex is developed so far and can serve its purpose, but further validation is required** (e.g. health data, slaughter data, antibiotic monitoring data, audit results)

Current tasks

- Provision of QIndex for participants in the value chain
 - Make it visible for dairy farmers
 - Talk to system providers / dairies etc. to advertise and explain QIndex
 - Clarify required intervals for calculation and transfer → “digital audit”
 - Prepare technical transfer → depending on declaration of consent by farmers
- **Reduction of the audit frequency in a good animal welfare situation**
- **Results are visible to milk producers and are used for their own management**

QIndex based on





The QIndex project is funded by
the Agricultural Pension Bank's Funding Fund



rentenbank



Thank You

