

# Index for Saved Feed

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### Seges

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**NAV**



Nordisk Avlsværdi Vurdering •

Nordic Cattle Genetic Evaluation

# CFIT system

Camera measurements of:

- Identification of cows
- Weight of cows based on shape
- Differences in kg feed on feeding table before and after eating
- Production from official milk recording



# CFIT data

	Herds	Genotyped cows	DMI registrations per cow
HOL	12	5104	45
RDC	7	3828	49
JER	7	3040	47

Foulum: 528 genotyped HOL cows

Luke: 356 genotyped RDC cows

# Index for Saved Feed

- Index for Saved feed is not calculated directly, but based on indexes for:
  - Dry matter intake (DMI) 14-280 days in lactation
  - Production (ECM) 14-280 days in lactation
  - Weight change, 30 to 280 days in lactation
- 1st and 2nd-5th lactation treated as different traits, but high genetic correlations between lactations exist
- Indexes are calculated by random regression

# Random regression

- Every farm has a production curve throughout the lactation
- Based on every single cow's deviation from this production curve, GEBV's for each cow are calculated
  - General level for the lactation
  - Increase or decrease in level trough lactation (used to calculate weight change)
- A GEBV is estimated for each day. An average GEBV is calculated for the hole lactation
- No genetic correlations between DMI, ECM and weight are assumed, which means current data creates correlations between traits

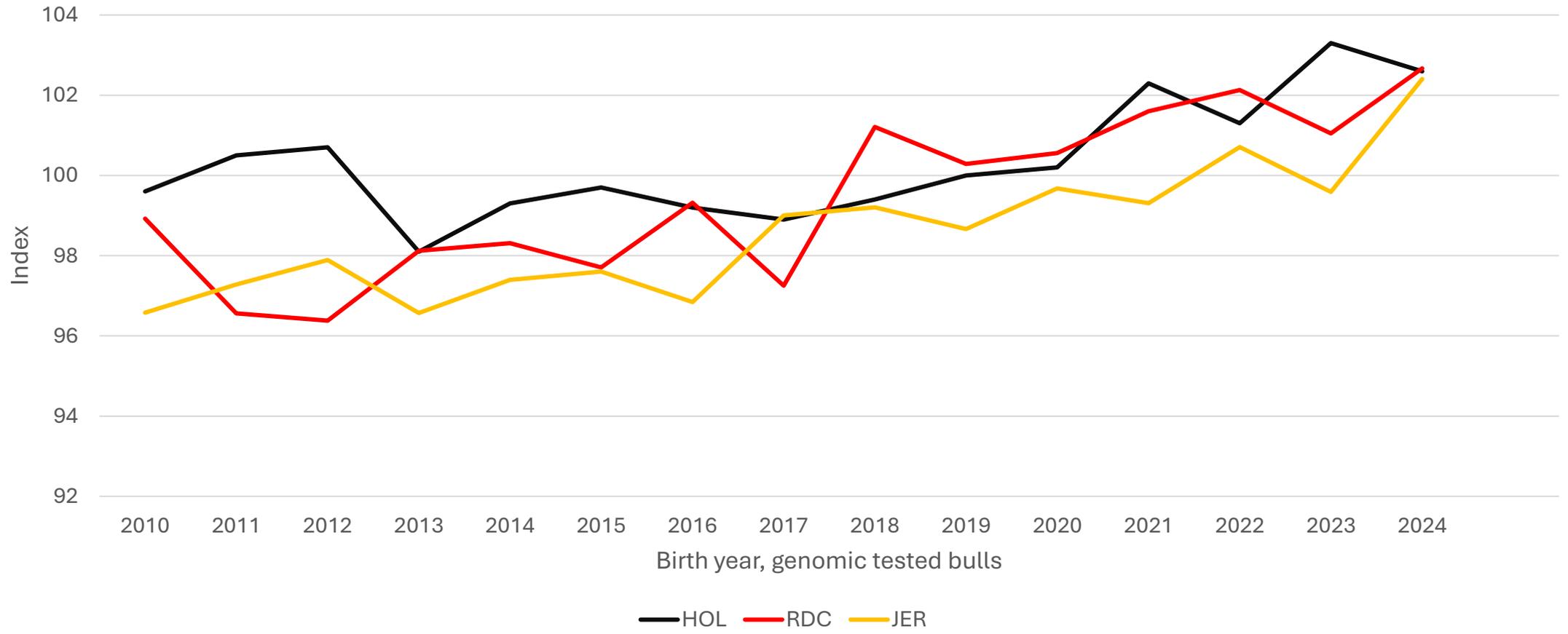
# Calculation of index for Saved Feed

- Energy requirements for production and weight change (BWC) set to the same values as used in Germany
- Animals with lowest DMI intake, when energy requirements for production (ECM) and weight change (BWC) is considered, get the highest values
- Saved Feed =  $-1 * (DMI - 0.4 * ECM - 4 * BWC)$ 
  - Saved Feed later transformed to an official relative Saved Feed index

# Official Saved Feed index

- Official Saved Feed index:
  - Mean: 100 for cows, which are 3-5 years old and with CFIT registrations
  - Standard deviation is 10 for the same cows
  - Candidate bulls have a standard deviation of 6-7
  - Proven bulls have a standard deviation of app. 10
  - Weight between 1<sup>st</sup> and later lactations, 1:2 (double weight on later lactations)

# Genetic trend, Saved Feed index



# Correlation between the new Saved Feed index and the indexes for DMI, ECM, weight and weight change

	Saved Feed		
	HOL	RDC	JER
DMI (dry matter intake)	-0,55	-0,75	-0,55
ECM (production)	0,45	0,30	0,55
Weight	-0,55	-0,60	-0,55
Weight change	-0,25	-0,20	-0,05

- Big reduction in dry matter intake
- No reduction in production
- Big reduction in weight

# Correlations to other traits

## HOL

	Saved Feed	DMI	ECM	Weight
Fertility	-0,05	-0,10	-0,20	0,00
Udder health	-0,10	-0,05	-0,15	0,05
General health	-0,10	-0,15	-0,30	0,00
Young stock surv.	0,10	-0,20	0,10	-0,20
Longevity	0,05	0,00	0,00	-0,20

- Small correlations between Saved Feed and health traits
- Negative correlations are not caused by Saved Feed, because
  - Small negative correlation between DMI and health traits exists
  - Negative correlation between ECM and health traits exist

# Correlations to other traits

## RDC

	Saved Feed	DMI	ECM	Weight
Fertility	0,15	-0,30	-0,25	-0,25
Udder health	0,10	-0,15	-0,15	0,00
General health	-0,10	0,00	-0,20	0,00
Young stock surv.	0,15	-0,15	0,05	-0,20
Longevity	0,20	-0,20	0,05	-0,20

# Correlations to other traits

## JER

	Saved Feed	DMI	ECM	Weight
Fertility	-0,15	-0,05	-0,30	0,00
Udder health	-0,10	-0,05	-0,20	0,00
General health	-0,05	-0,10	-0,20	0,00
Young stock surv.				
Longevity	-0,05	0,00	-0,10	-0,05

# Correlation with old index

- HOL: 0,30
- RDC: 0,50
- JER: 0,25
- Low correlations and very big changes will occur
- Reasons for changes:
  - Energy sink in old index was estimated too low. Animals with high production were punished
  - Residual feed efficiency was estimated per week. Measurement uncertainty were accumulated

# Value of index for Saved Feed

- One extra index unit of Saved Feed reduces DMI intake with app. 0,06 kg DMI per day
  - It accumulates to 15-20 kg DMI per lactation
- The cost of 1 kg of dry matter is app. 0,2€
- Reduced feeding cost per lactation: 3-4 € per index unit of Saved Feed per lactation
- Value of NTM is in 2020 app. 9€ per lactation
- The new index for Saved Feed has a big economic value

# Summary

## New Saved Feed index

- More efficient reduction in dry matter intake (DMI)
- No negative correlation to production (ECM)
- Indication of same reduction in body weight as in old index
- Index has a big economic value
- Will be official from February run 2025