Does MIR-based information contribute to practical decision-making on the farm?

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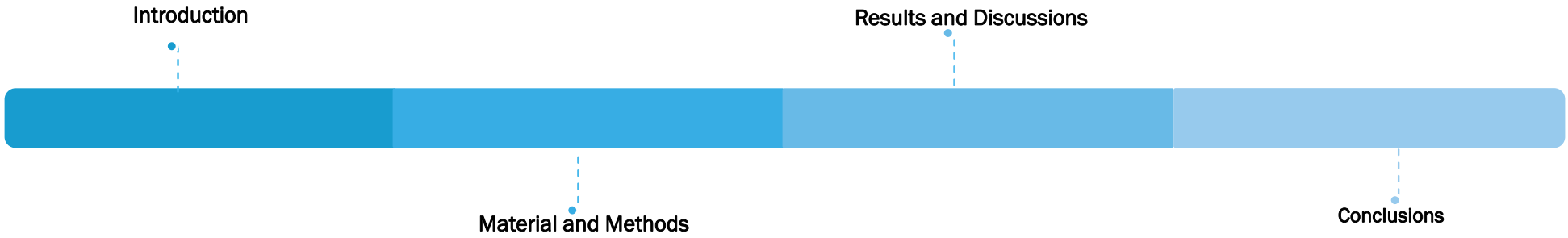
Does MIR-based information contribute to practical decision-making on the farm?



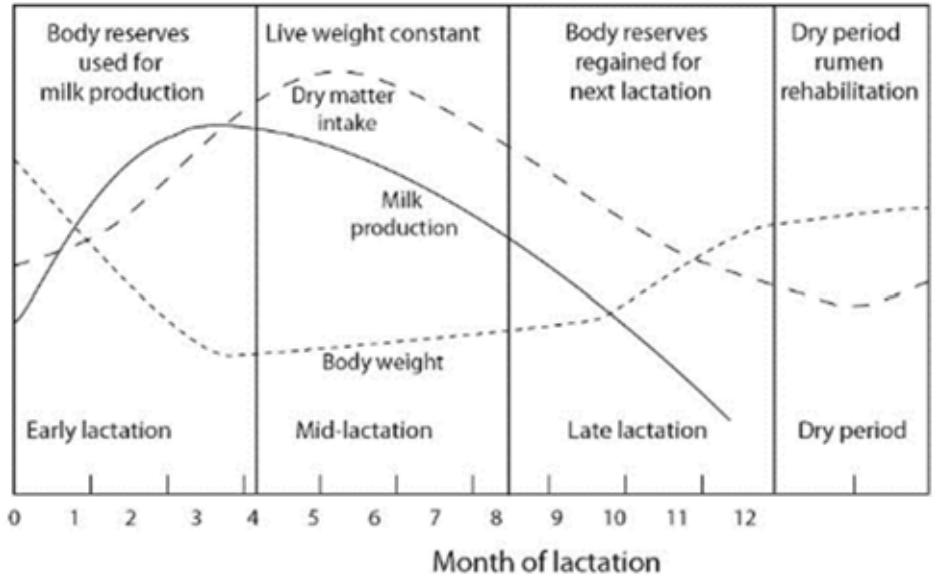
Let's be honest:

- **Most farmers don't care about data**
- **Most farmers care about healthy cows, good milk, and fewer problems**

So the real question is:

👉 **Does MIR analysis actually help farmers on the farm?**

Managing Cow Lactation Cycles | The Dairy Site



Dry matter intake, milk yield and live weight changes in a cow during her lactation cycle

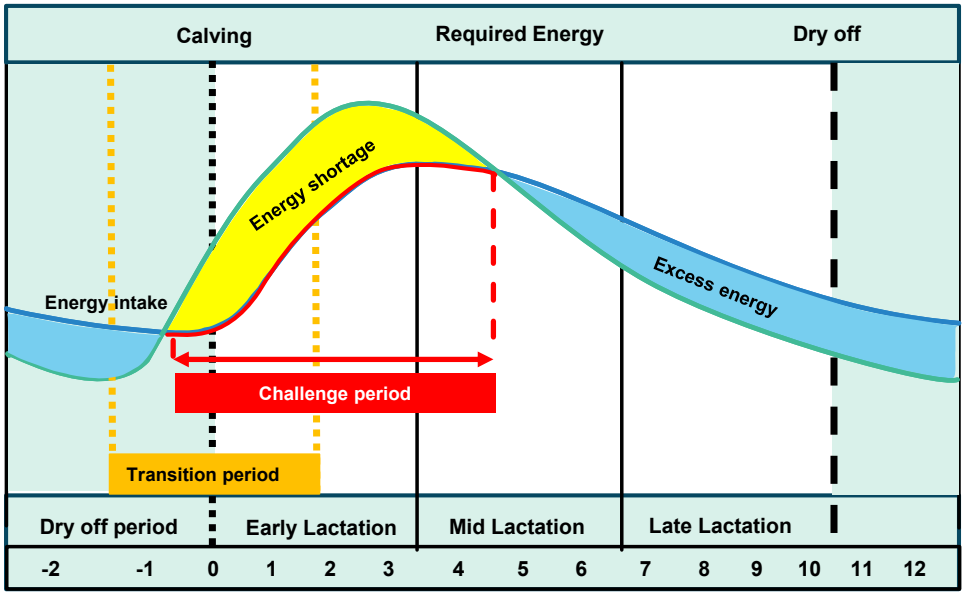
What MIR Can Do on a Real Farm:

Every dairy farmer knows these challenges:

- Cows struggle in **early lactation**
- ⚠ Ketosis often comes **too late to notice**
- Feeding decisions are made **under pressure**
- There is **no time for extra work**

Mid-Infrared (MIR) milk analysis helps by**:**

- Detecting **energy problems early**
- Using milk samples that are **already collected**
- Giving **clear signals**, not complicated numbers
- Supporting better **feeding and management decisions**



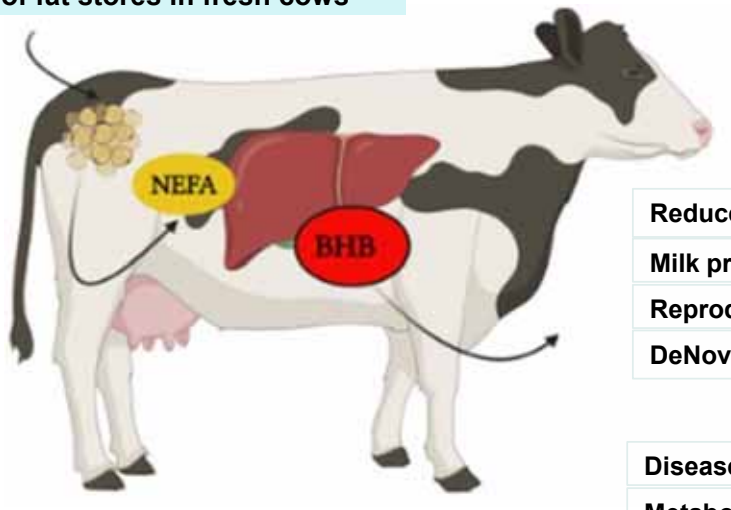
Mild Negative energy balance in early lactation = normal effect of the natural reproduction process
=> use of fat stores in fresh cows

Main benefits:

- No technical jargon
- Focus on **problems farmers already know**
- Clear link between **MIR → decisions → benefits**

This presentation shows:

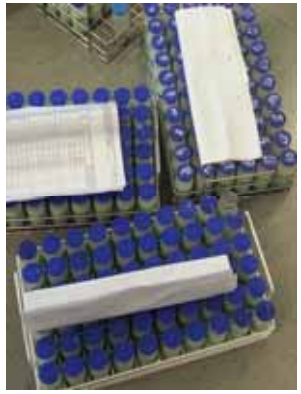
- How farmers use MIR tools like ***KetoMIR***
- What farmers find **useful – and what they ignore**
- What **10 years of experience** really tell us



Reduced appetite
Milk production
Reproduction capacity
DeNovo fatty acids

Disease prevalence
Metabolic intoxication: Kethones
Severe negative energy balance
Preform fatty acids






Milk analysis using mid-infrared standardized spectra (MIR)

Fig.1: Milk Sample

Fig.2: Bentley FTS-Milk Analysis Instrument (Source: Bentley-Instruments)

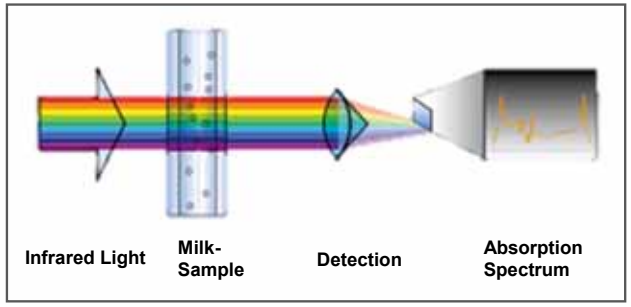


Fig.3: Infrared analysis of milk Scheme (Source : Bentley-Instruments)

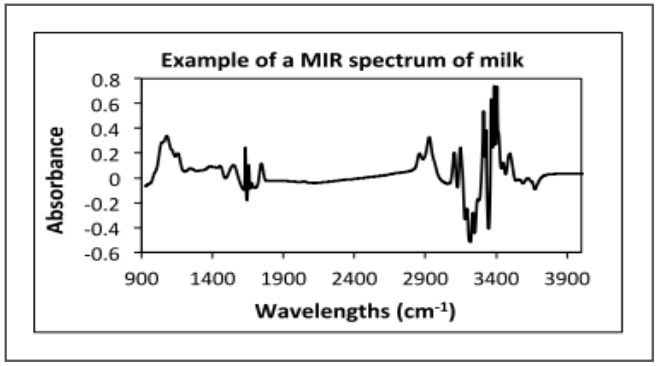


Fig.4: Typical Milk MIR- Absorption Spectrum (Source: OptiMIR)

Main components:
Fat, protein, lactose, urea ...

Fine components:
Fatty acids, minerals, Lactoferrin, BHB, acetone ...

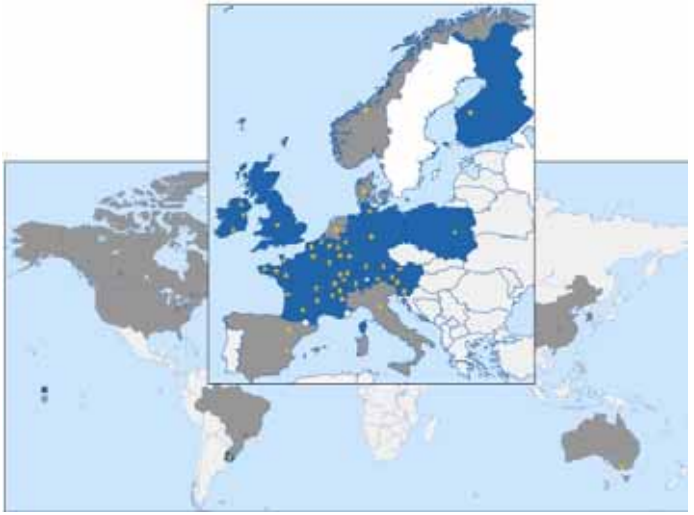
Complex components:
Energy Deficit / Ketosis, Mastitis, CH4, Pregnancy ...

MILK ANALYSIS USING MID-INFRARED SPECTRA (MIR)

Reasons for MIR Variability:

- Different instrument brands and technologies (e.g. Foss, Bentley)
- Differences between instrument models and individual machines
- Component tolerances, maintenance activities and replacement of optical/electronic parts
- Instrument drift due to wear, ageing and environmental conditions (temperature, humidity, etc.)
- Differences in implementation and calibration procedures between laboratories

  → **Correction through standardization procedures**

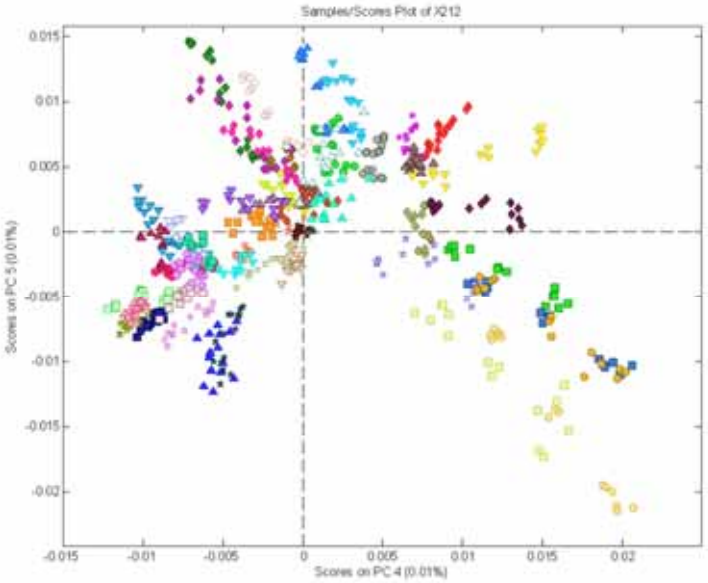


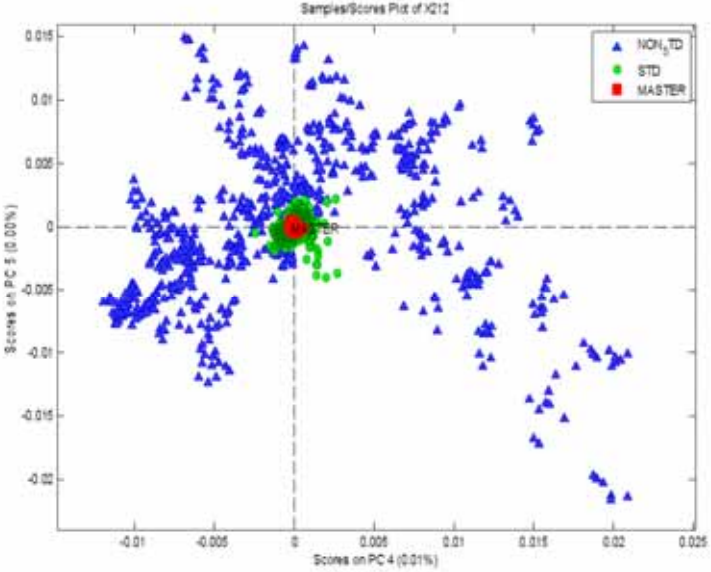
Standardization Procedures:

- Manufacturer-specific standardization (e.g. Foss Equalizer, Bentley Stabilizer)
- Cross-manufacturer standardization through the **EMR/CRA-W standardization network**
- Continuous monitoring of instrument performance
- Bias and slope correction using reference samples and pilot sets (limited to selected components)

MILK ANALYSIS USING MID-INFRARED SPECTRA (MIR)

Standardisation Method
after Grelet et al., 2015

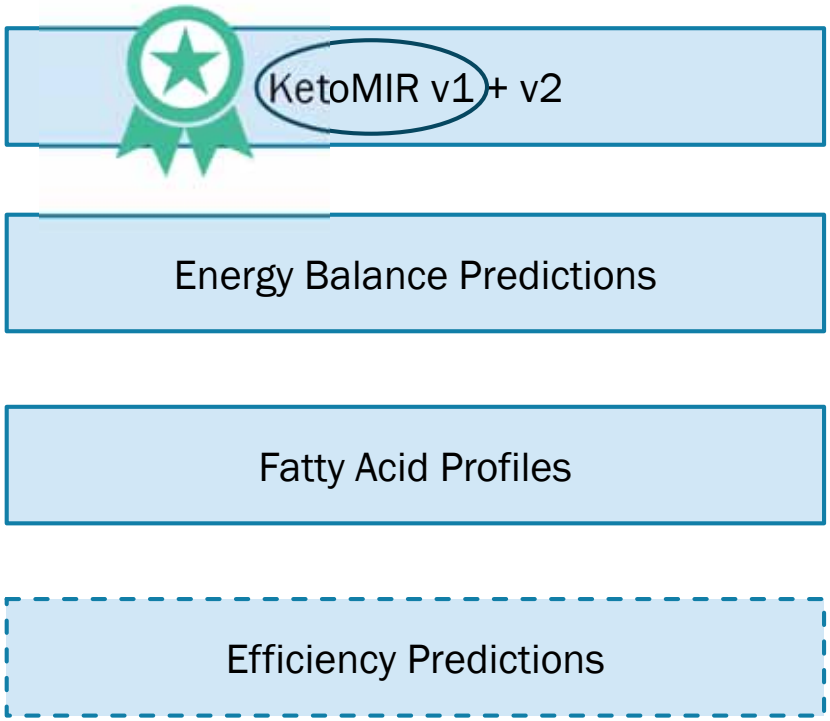




EMR/CRA-W MIR Standardization Network:

- 113 instruments from various manufacturers participating in standardization
- 102 instruments in routine operation (including 18 external clients)
- 11 instruments in research projects

NEW MIR MONITORING TOOLS FOR FARMERS AND ADVISORS



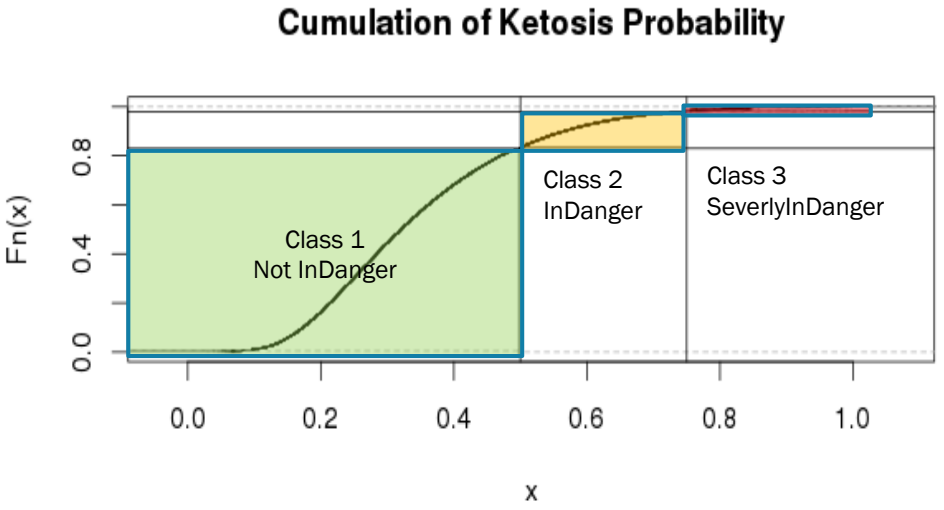
WHAT IS KETOMIR?

Fixed effects (Qualitative Variables):

- Lactation Number
- Lactation Week
- Breed
- Milking Time

MIR milk components (Quantitative Variables):

- Standard MLP Components
- Ketone Bodies
- Fatty Acids
- Minerals



Modells	Calibration Set			Test Set		
Logit modells	Sens	Spec	error	Sens	Spec	error
DIM 1-120	169/109479			25/2966		
Components	0.702	0.856	0.145	0.720	0.840	0.165

For each **Week in Milk** an accurate inDanger% is chosen and then the thresholds are detected.

KETOMIR IN LKV ONLINE HERDMANAGER FROM RDV

- Fruchtbarkeit
- Stoffwechsel
  - KetoMIR
    - » **Übersicht**
    - » Probemelkungen
  - Energie- u. Nährstoffversorgung Herde
  - Diagnoseentwicklung 1
  - Diagnosenvergleich Herde/Population
  - Stoffwechselbedingte Abgänge

In module „Metabolism“

Übersicht Anteil Ketoklasse / PM-Datum

Ketose Klasse 3	0%	6%	0%	7%	9%	4%	3%	7%	4%	4%	0%
Ketose Klasse 2	20%	28%	15%	7%	9%	12%	27%	11%	19%	15%	39%
Ketose Klasse 1	80%	67%	85%	87%	82%	85%	70%	82%	78%	81%	61%
	06.02.20	07.01.20	02.12.19	04.11.19	03.10.19	26.08.19	08.07.19	11.06.19	04.05.19	07.04.19	08.03.19

« ‹ 1 2 3 4 › » 25

Laktage	Laktzahl	MKg	06.02.20	07.01.20	02.12.19	04.11.19	03.10.19	26.08.19	08.07.19	11.06.19	04.05.19	07.04.19
336	11	17,8								2	2	2
2	11	S									1	1
58	9	40,7	1	2								
440	8	14,9										
		abg.									3	2
		abg.									1	1
226	8	24,9					1	1	1			
		abg.						1	2			
		abg.					1	1	2			
53	7	35,1	2	1								2
107	7	37,9	1	1	1	1						
		abg.					2	3	3			
64	8	52,3	2	3								
127	8	30,5			1	3						
268	7	16,3						1	1	2		

Minimum unterschritten | Maximum überschritten | Grenze 1 überschritten | Grenze 2 überschritten

geringes Risiko | mittleres Risiko (subklinisch) | hohes Risiko (klinisch)

Probedatum: 07.01.2020

« ‹ 1 › » 25

Lakt. Zahl	Lakt. Tage	ST	Milch kg	Fett %	Eiw %	ZZ	FEQ	Harnstoff	Harnstoff-Klasse	Ketoseklasse
8	34		45,7	3,70	3,17	524	1,17	15	2	3
4	59		39,4	3,94	3,12	23	1,26	11	1	2
9	28		40,9	3,69	3,41	133	1,08	19	5	2
3	17		37,0	4,92	3,59	28	1,37	16	5	2
4	24		40,3	5,26	3,47	435	1,52	23	5	2
3	51		37,4	5,66	3,32	21	1,70	23	5	2
7	23		37,9	4,34	3,40	192	1,28	26	5	1

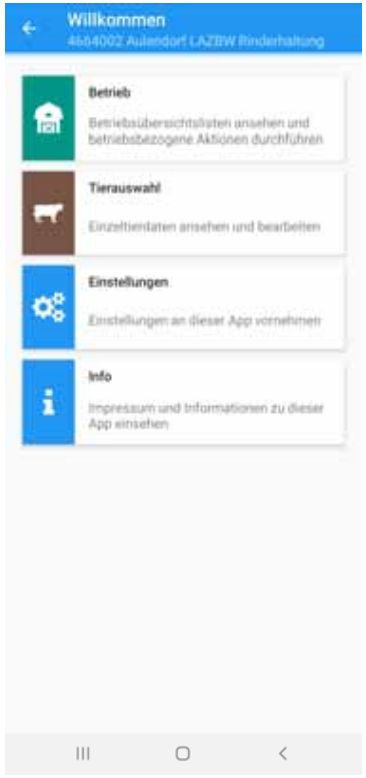
Übersicht Kontrolltag 07.01.2020

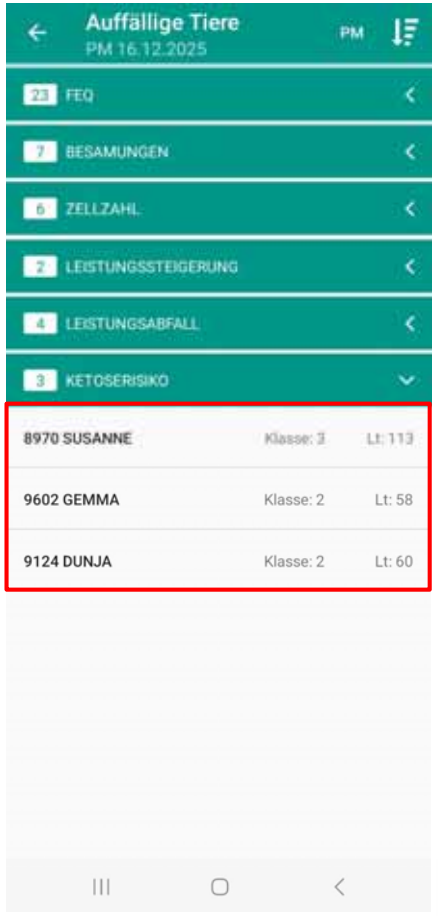
Ketose Klasse 3	0%	7%	6%	< 5%
Ketose Klasse 2	0%	33%	28%	< 20%
Ketose Klasse 1	100%	60%	67%	> 80%
	1. Laktation	ab 2. Laktation	alle Laktationen	Zielwerte

« ‹ 1 2 3 4 5 6 › » 25

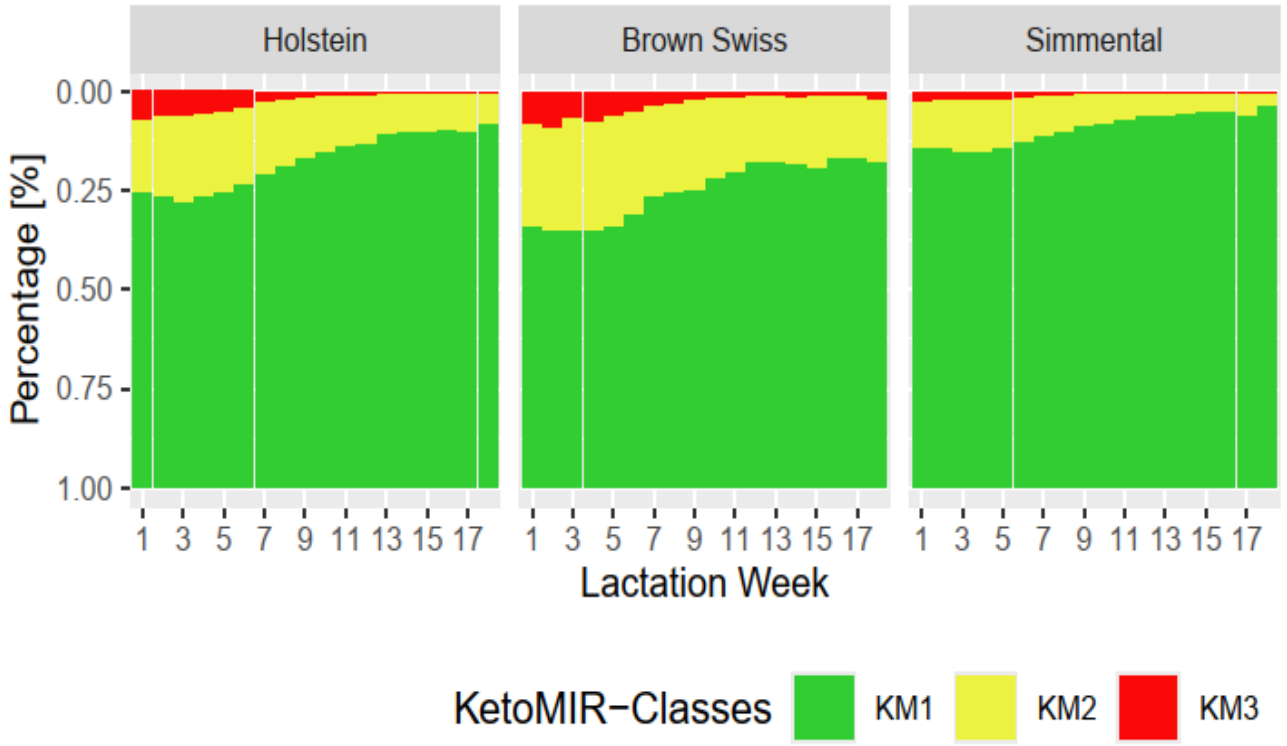
Datum	LTag	Text
06.02.2020	64	. . . . . PM 05 52,3 3,98 3,04 1026 28,0
07.01.2020	34	. . . . . PM 04 45,7 3,70 3,17 524 15,0
09.12.2019	5	Mastitis-akut
05.12.2019	1	Ketose
04.12.2019	0	8. Kalbung 1 N

KETOMIR IN LKV FROM RDV APP

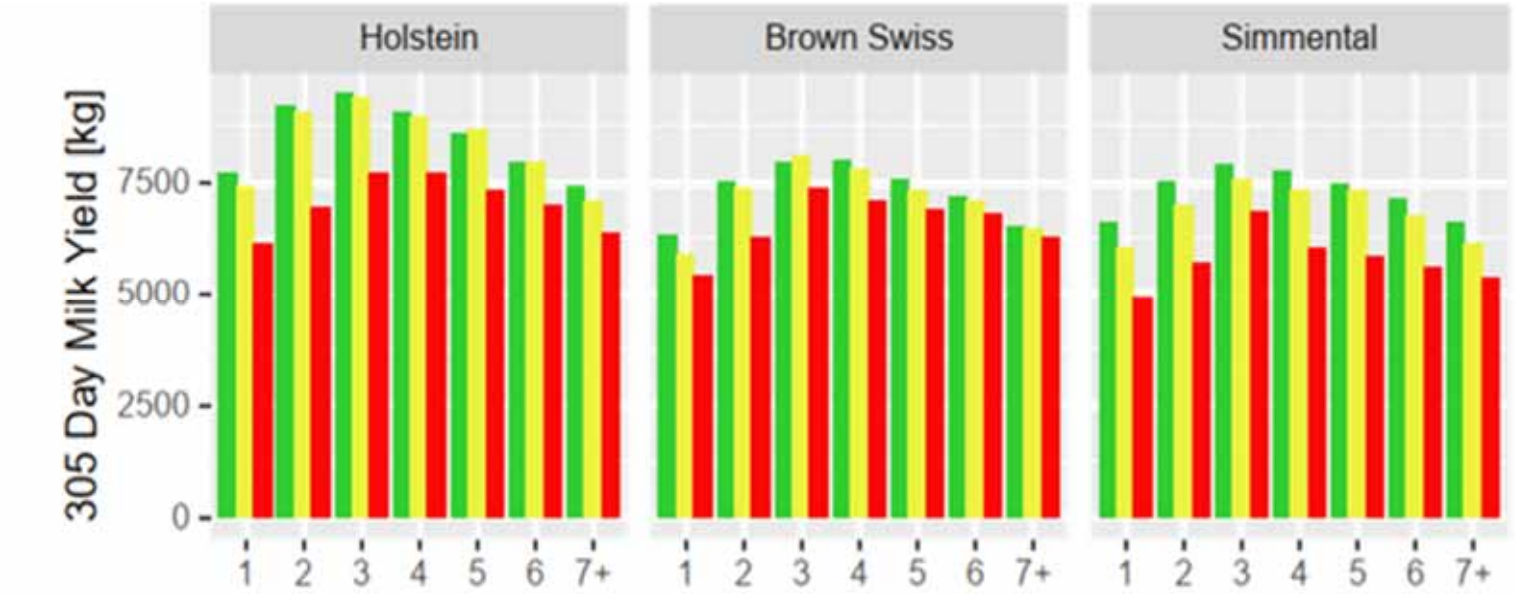




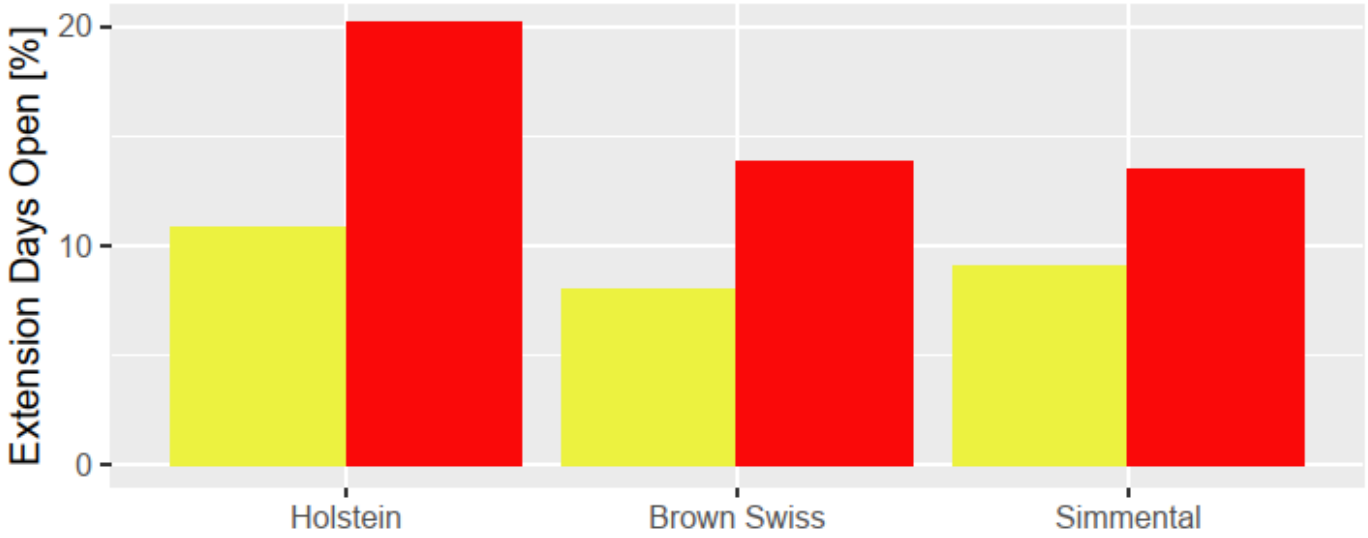
Distribution of KetoMIR classes over lactation weeks by breed



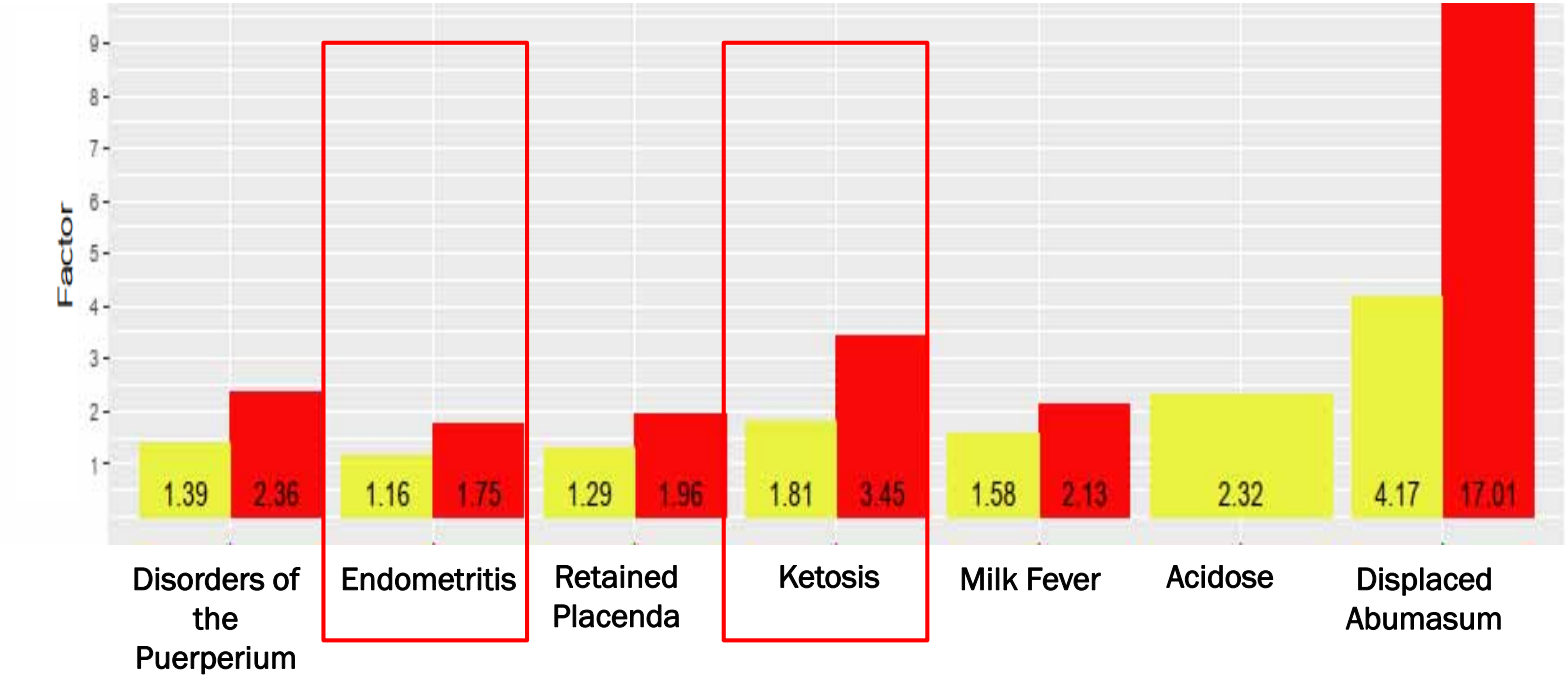
305 Day Milk Yield and KetoMIR class over lactation by breed

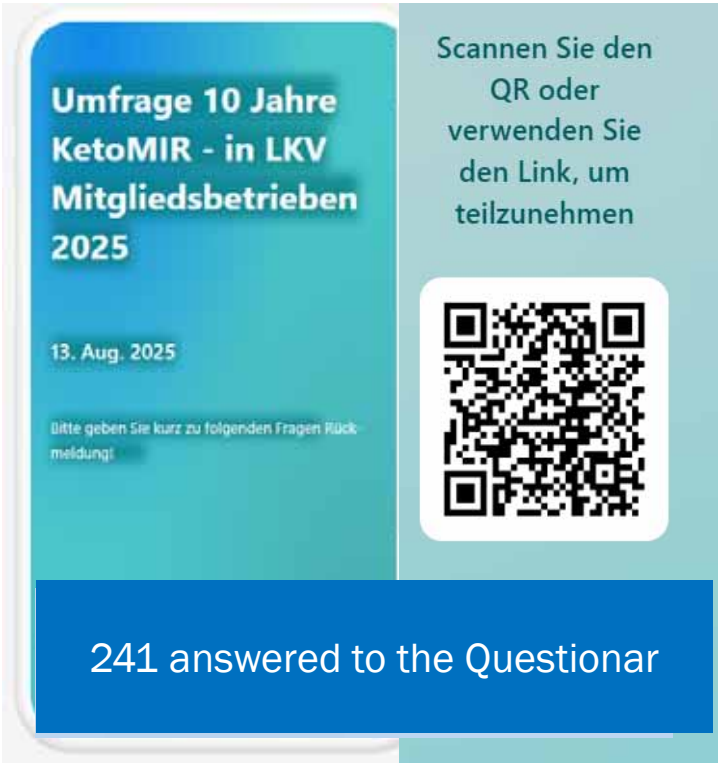


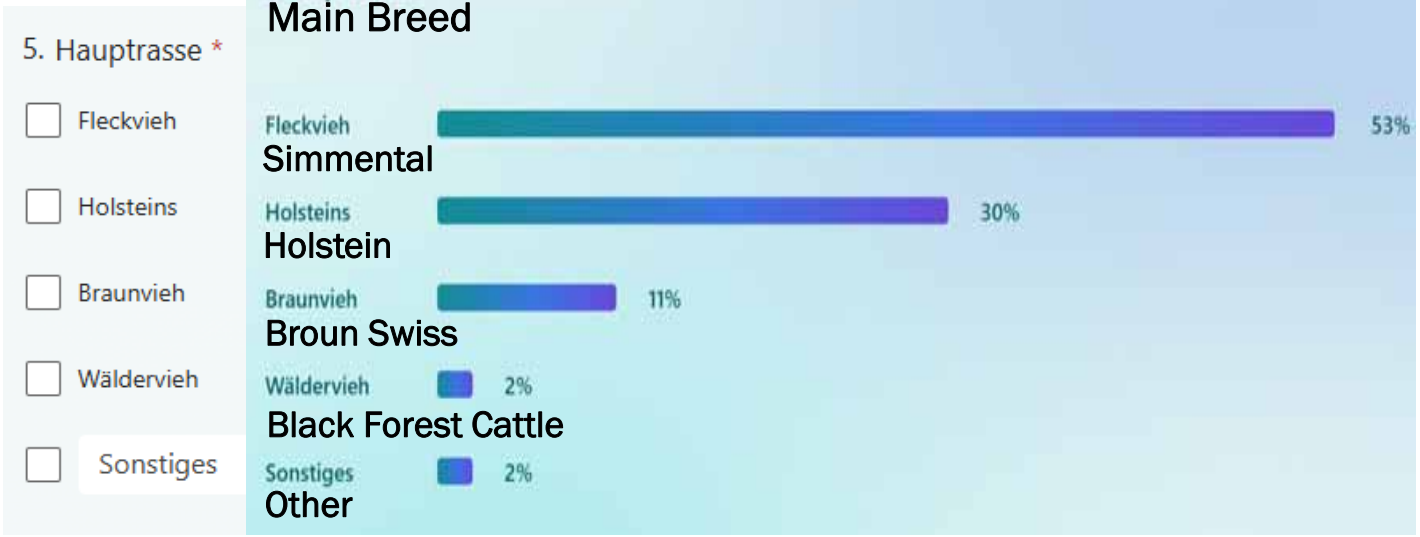
Extension of Days open relativ to KetoMIR−Class 1

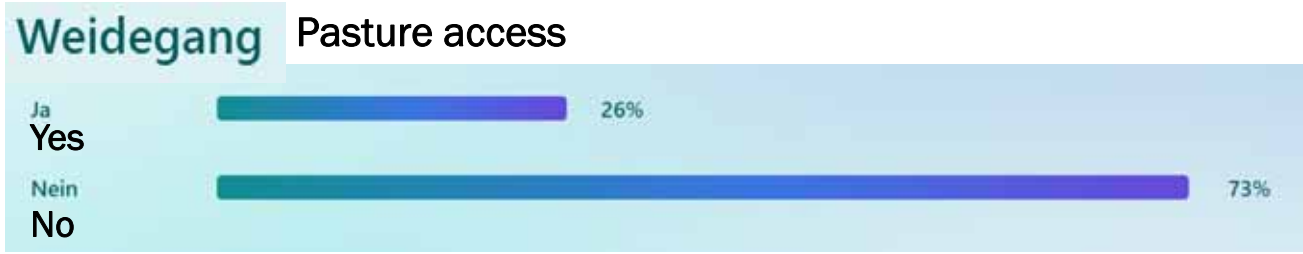


Prevalence of ketosis–related diseases relative to KetoMIR class 1

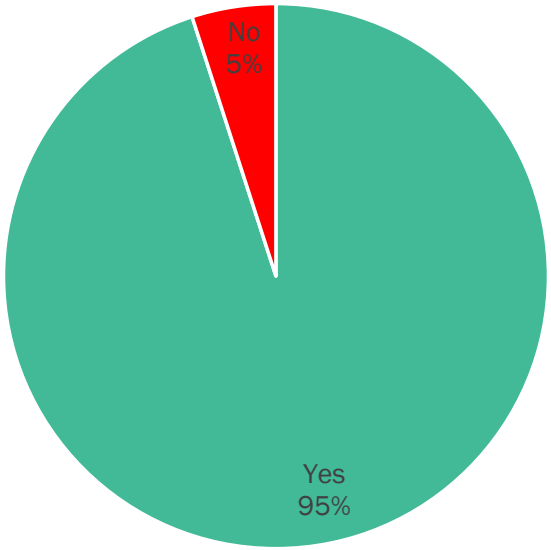



Umfrage 10 Jahre KetoMIR - in LKV Mitgliedsbetrieben 2025
13. Aug. 2025
Bitte geben Sie kurz zu folgenden Fragen Rück-meldung!
Scannen Sie den QR oder verwenden Sie den Link, um teilzunehmen
241 answered to the Questionar

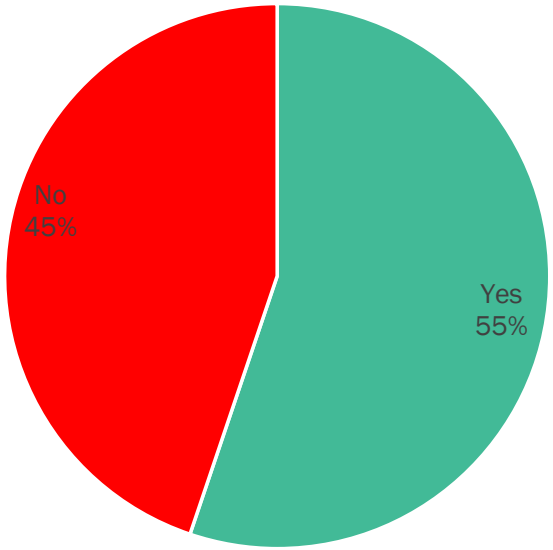

5. Hauptrasse *
Fleckvieh
Holsteins
Braunvieh
Wäldervieh
Sonstiges
Hauptrasse
Main Breed
Fleckvieh 53%
Simmental
Holsteins 30%
Holstein
Braunvieh 11%
Broun Swiss
Wäldervieh 2%
Black Forest Cattle
Sonstiges 2%
Other


Weidegang
Pasture access
Ja 26%
Yes
Nein 73%
No

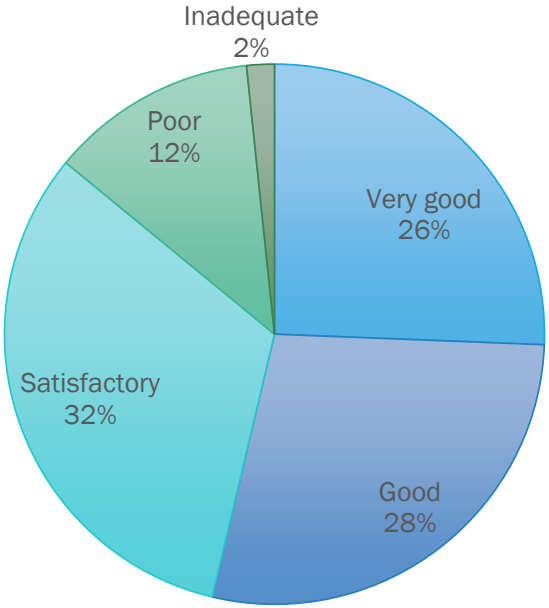
Do you know KetoMIR?



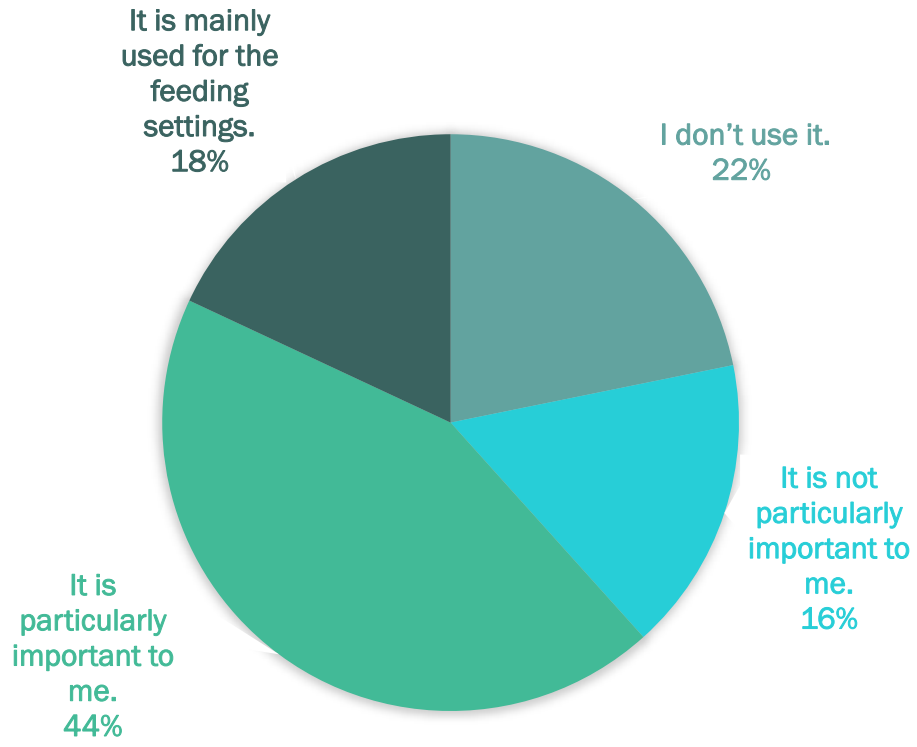
Do you use KetoMIR?

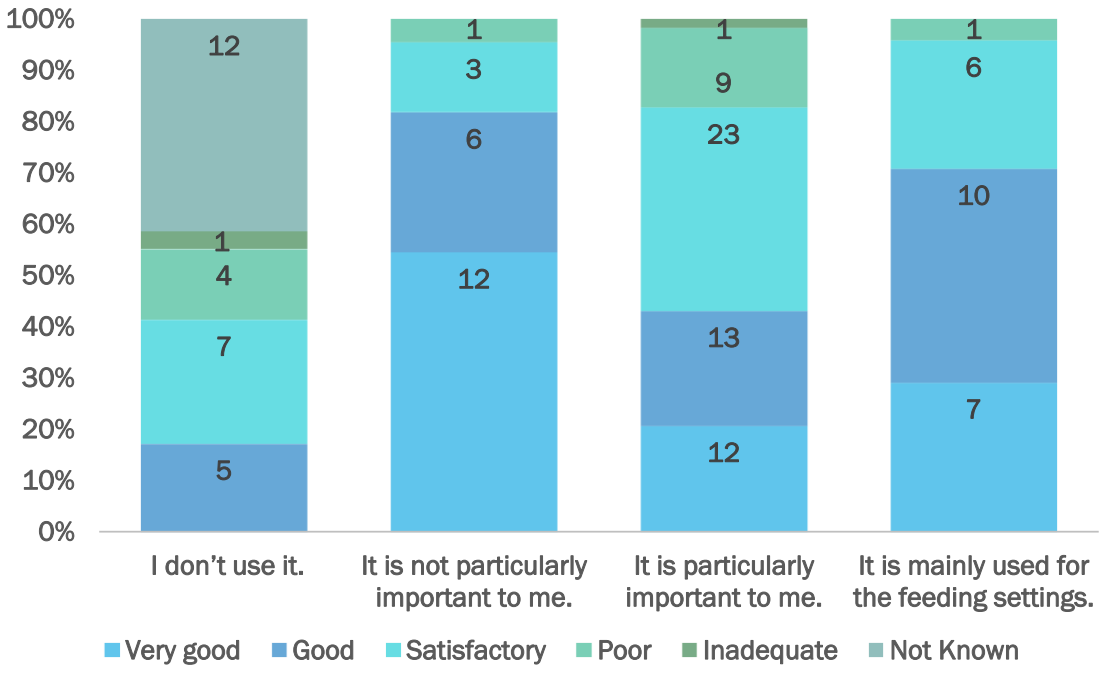


How do you find KetoMIR?



Are the informations from KetoMIR helpful?





The conclusions drawn from the 10 years of experience with the KetoMIR system:

1.Improved Management of Ketosis: The implementation of the KetoMIR system has significantly enhanced the management of ketosis in dairy cows. By utilizing advanced monitoring tools and predictive analytics, farmers can better assess the energy balance and health status of their herds, leading to timely interventions that reduce the prevalence of ketosis-related diseases.

2.Enhanced Dairy Performance: The use of the KetoMIR system has been associated with improved dairy performance metrics, such as increased milk yield and reproductive efficiency. By addressing negative energy balance and optimizing feeding strategies, the system contributes to better overall herd health and productivity, demonstrating its effectiveness over the past decade.

Message to take HOME:

"There is a *lot of extra data* that I, as a *farmer*, couldn't process on my own. But the way MRO (*LKV*) prepares it makes it

- ***easy to use in practice* and**
- ***doesn't take much extra time***

in the farm to process it."

Does MIR-based information contribute to practical decision-making on the farm?

THANK YOU FOR YOUR ATTENTION