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CLOSING THE UTILISATION GAP: CONVERTING ROUTINE MILK ANALYSIS DATA INTO DECISION SUPPORT FOR MORE SUSTAINABLE DAIRY FARMING

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ANALYTICS BEYOND MEASURE

ICAR 2026
VERONA ITALY

THE PRESSURE TO ACT IS NO LONGER OPTIONAL

- Livestock = 14% of global GHG emissions; dairy alone ~4.2%
- Public, political and regulatory pressure on livestock emissions is intensifying
- Productivity, health and precision nutrition remain the most effective mitigation strategies (FAO, 2019)

Opportunity: Acting now with tools already available is far more effective than acting later under legislation

Source: Greenpeace International, FAO Global Conference on Sustainable Livestock Transformation, Rome, Sept 2025

THE OPPORTUNITY BASED ON REAL-LIFE DATA

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ANALYTICS BEYOND MEASURE

~200,000

~400,000

Linear mixed models as described in detail elsewhere (https://doi.org/10.1016/j.prevetmed.2020.105123)

UDDER HEALTH – SOMATIC CELL COUNT (SCC)

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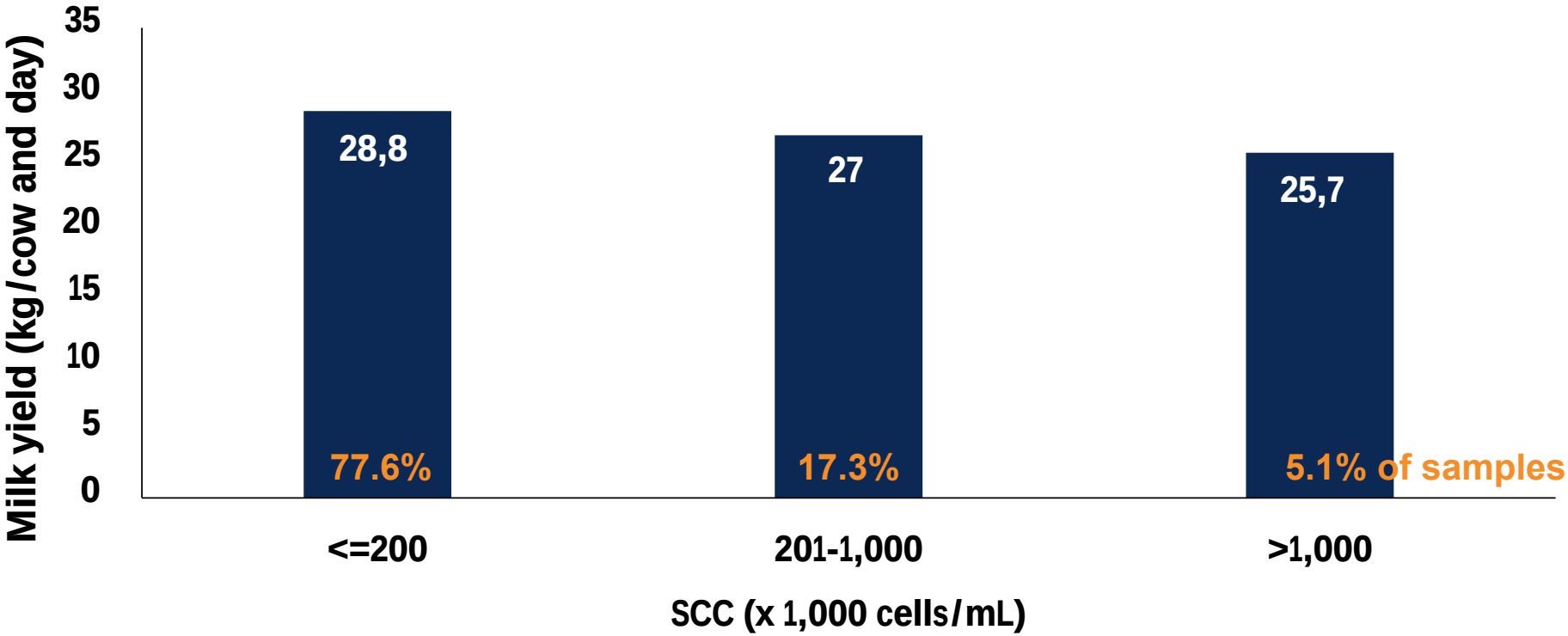

ANALYTICS BEYOND MEASURE

Daily impact per 100,000 cows

~47 t (1.6%) milk loss	**~1.5 t** milk protein loss	**~20,000** adults' daily protein intake*	**~2%** of CO_2e/kg milk

** Based on ~75 g protein/day, typical European adult intake (EFSA)*

SHARPER PICTURE WITH DIFFERENTIAL SCC

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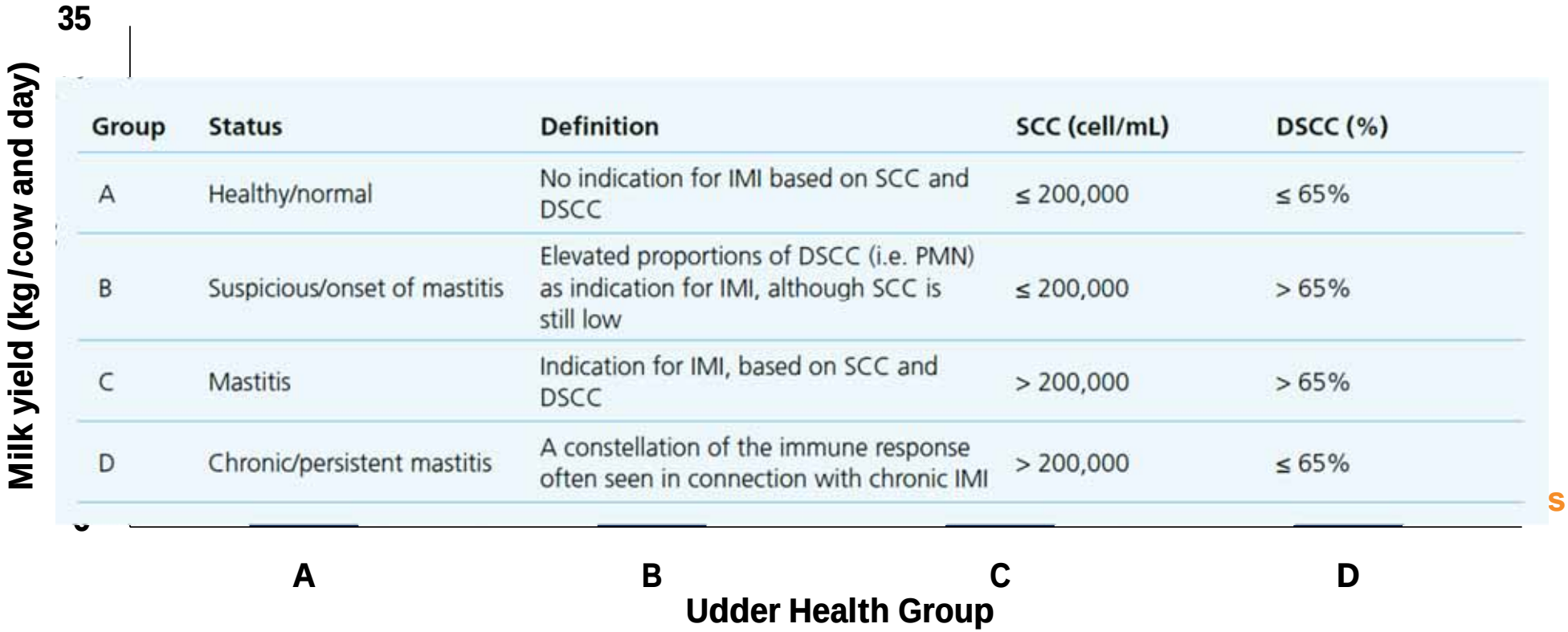


Group	Status	Definition	SCC (cell/mL)	DSCC (%)
A	Healthy/normal	No indication for IMI based on SCC and DSCC	≤ 200,000	≤ 65%
B	Suspicious/onset of mastitis	Elevated proportions of DSCC (i.e. PMN) as indication for IMI, although SCC is still low	≤ 200,000	> 65%
C	Mastitis	Indication for IMI, based on SCC and DSCC	> 200,000	> 65%
D	Chronic/persistent mastitis	A constellation of the immune response often seen in connection with chronic IMI	> 200,000	≤ 65%

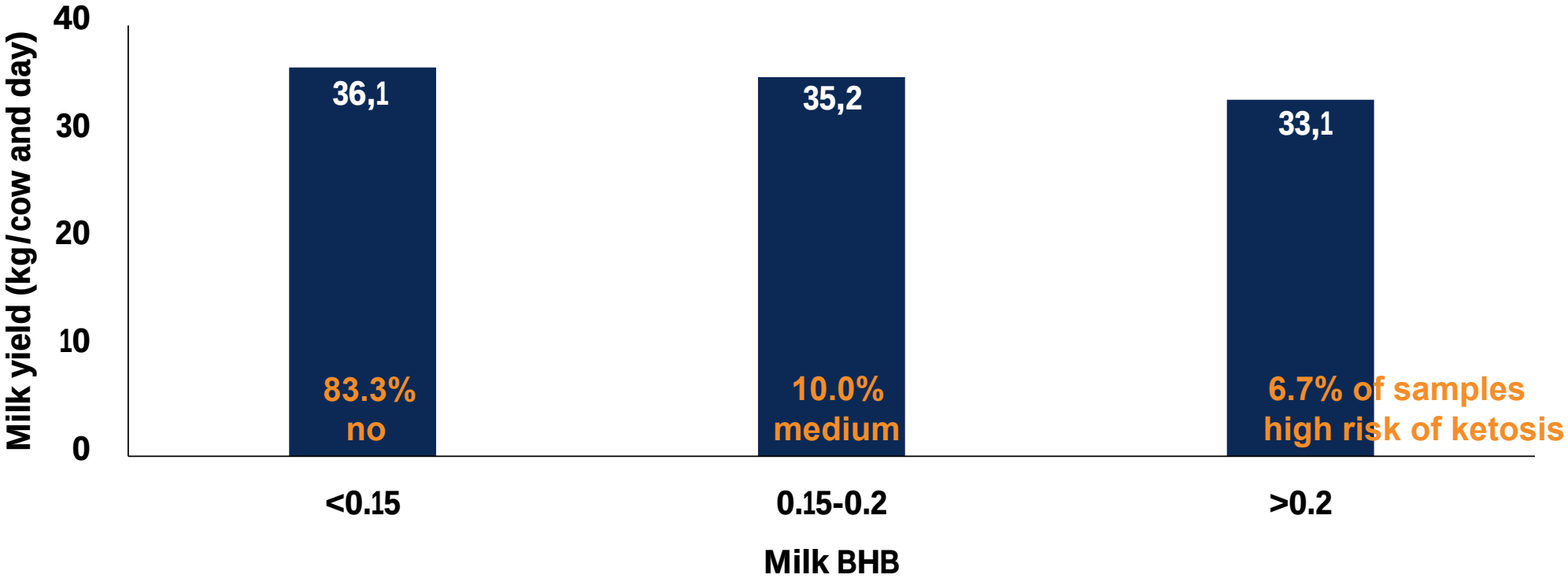
ANALYTICS BEYOND MEASURE

Daily impact per 100,000 cows

~61 t (2.1%) milk loss	**~2 t** milk protein loss	**~26,000** adults' daily protein intake*	**~2.5%** of CO_2e/kg milk

** Based on ~75 g protein/day, typical European adult intake (EFSA)*

METABOLIC HEALTH: MILK BHB



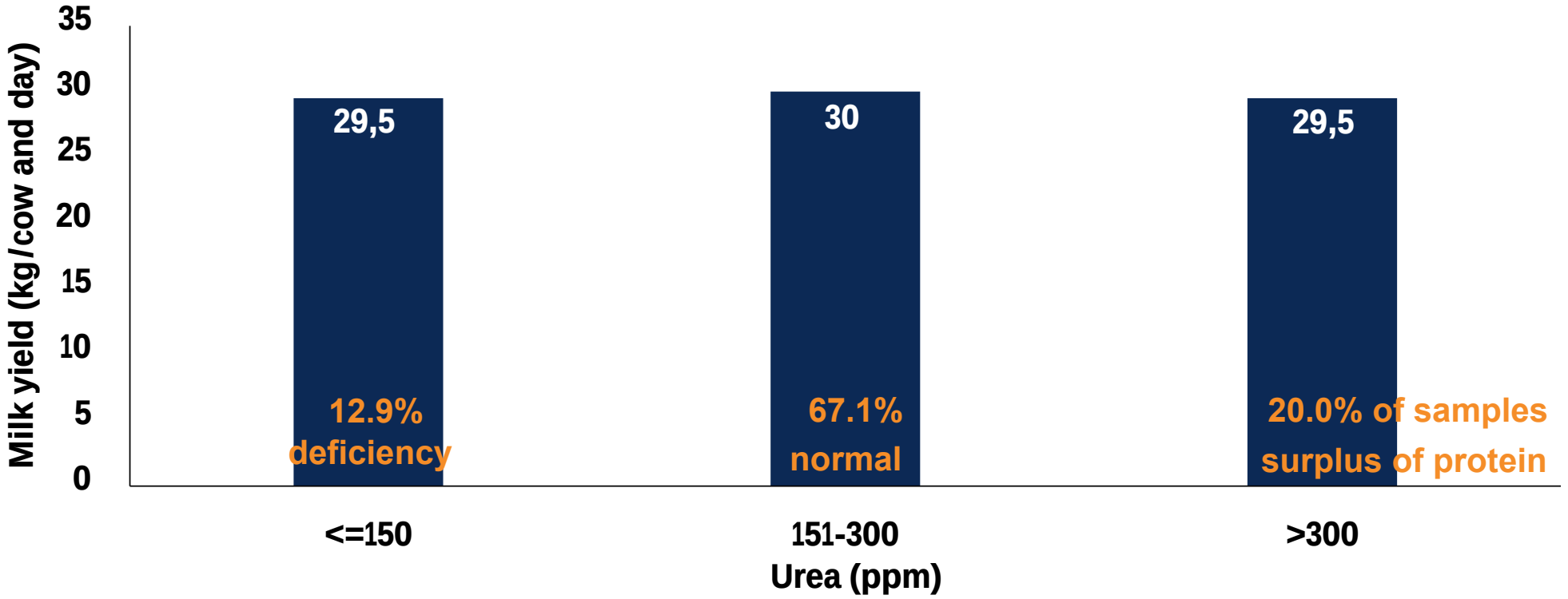
Daily impact per 100,000 cows

~2.4 t (0.08%) milk loss	**~80 kg** milk protein loss	**~1,100** adults' daily protein intake*	**~0.1%** of CO_2e/kg milk

** Based on ~75 g protein/day, typical European adult intake (EFSA)*

ANALYTICS BEYOND MEASURE

FEEDING EFFICIENCY: MILK UREA



Daily impact per 100,000 cows

~12.5 t (0.4%) milk loss	**~410 kg** milk protein loss	**~5,500** adults' daily protein intake*	**~0.4%** of CO_2e/kg milk

** Based on ~75 g protein/day, typical European adult intake (EFSA)*

PRECISION FEEDING – EXAMPLE ON CRUDE PROTEIN

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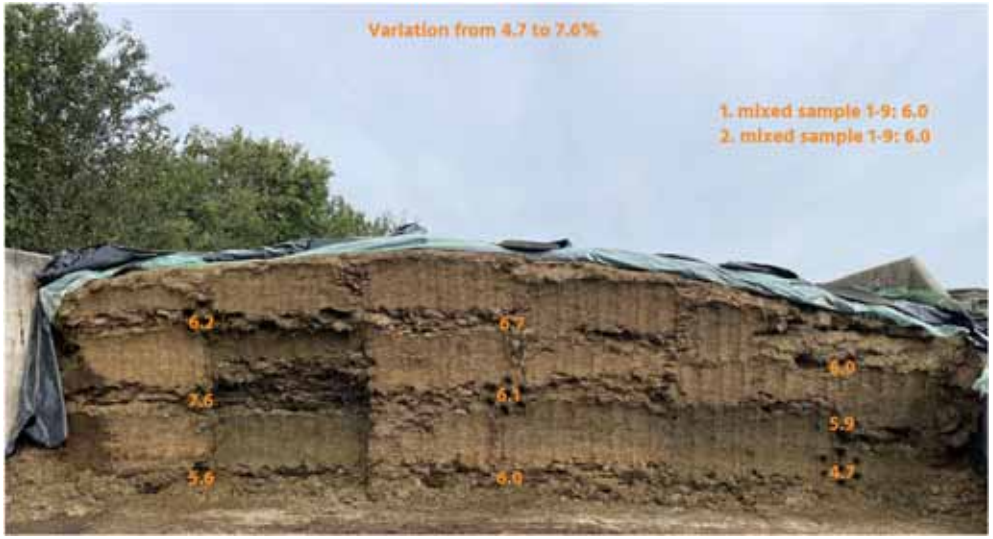
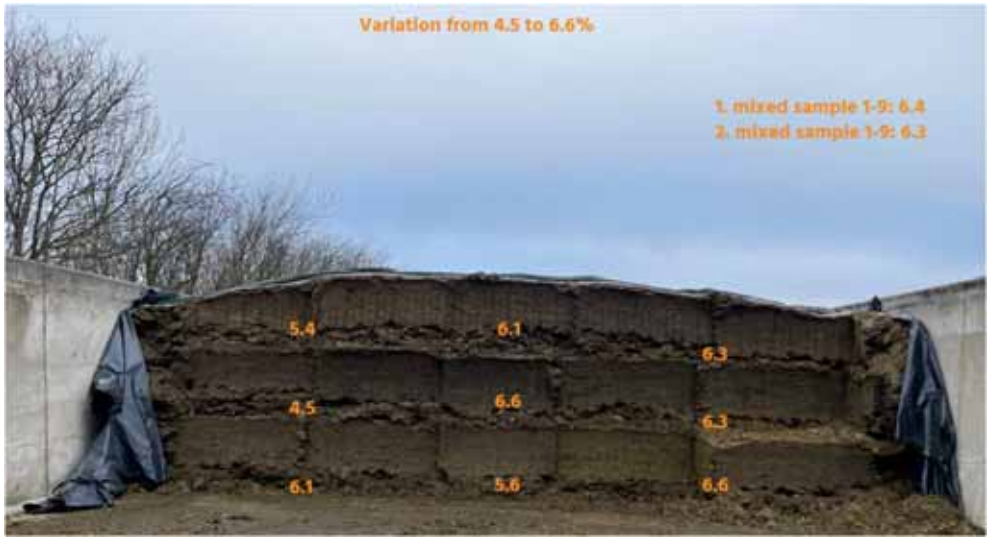
ANALYTICS BEYOND MEASURE

September



XP: 6.0%

November



XP: 6.3%

+120 g XP extra/cow/day from grass silage

→ ~300 g less rapeseed meal/cow/day

Daily impact per 100,000 cows

~30 t rapeseed meal saved	**~10 t** crude protein saved	**~130,000** adults' daily protein intake*	**~1%** of CO_2e/kg milk

** Based on ~75 g protein/day, typical European adult intake (EFSA)*

TAKE HOME MESSAGES

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ANALYTICS BEYOND MEASURE

- Innovation must continue to drive milk's carbon footprint down
- DHI testing can deliver more – if used more effectively
- DHI testing: A fast, low-cost, scalable lever available today

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