Mepron® improved average daily gain of steers fattened on a commercial farm in UK

Berryfields Farm, UK

AMINODairy®

mepron®

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Current Knowledge and Objective

- In a beef cattle study, Zhao et al (2019) showed that Mepron®:
  - decreased urinary N → positive environmental impact via lower N_2O emissions
  - increased N retention → positive impact on performance via higher ADG

- **Objective of the present study: To confirm the beneficial effect of Mepron® on growing performances of steers fattened on a commercial farm in UK**

Details on Zhao et al (2019) – Material and Methods

- Experimental design:
  - 4 x 4 Latin Square
  - 8 castrated Simmental bulls (24 months, 494 kg):
  - 19 days experimental period
  - Basal diet alone or with 10, 20 or 30 g Mepron®

- Measurements:
  - BW at beginning and end of each period
  - Separate feces and urine collection:
    - Nutrient digestibility
    - N balance
    - N_2O emissions from urine application on soil

Ingredients, basal diet	% DM
Corn silage	46.3
Corn grain	37.3
Soybean meal	6.8
Corn gluten feed	4.1
Wheat bran	4.3
Salt and sodium bicarbonate	1.2
Crude protein	12.6
mMet balance (NDS; %)	186.8

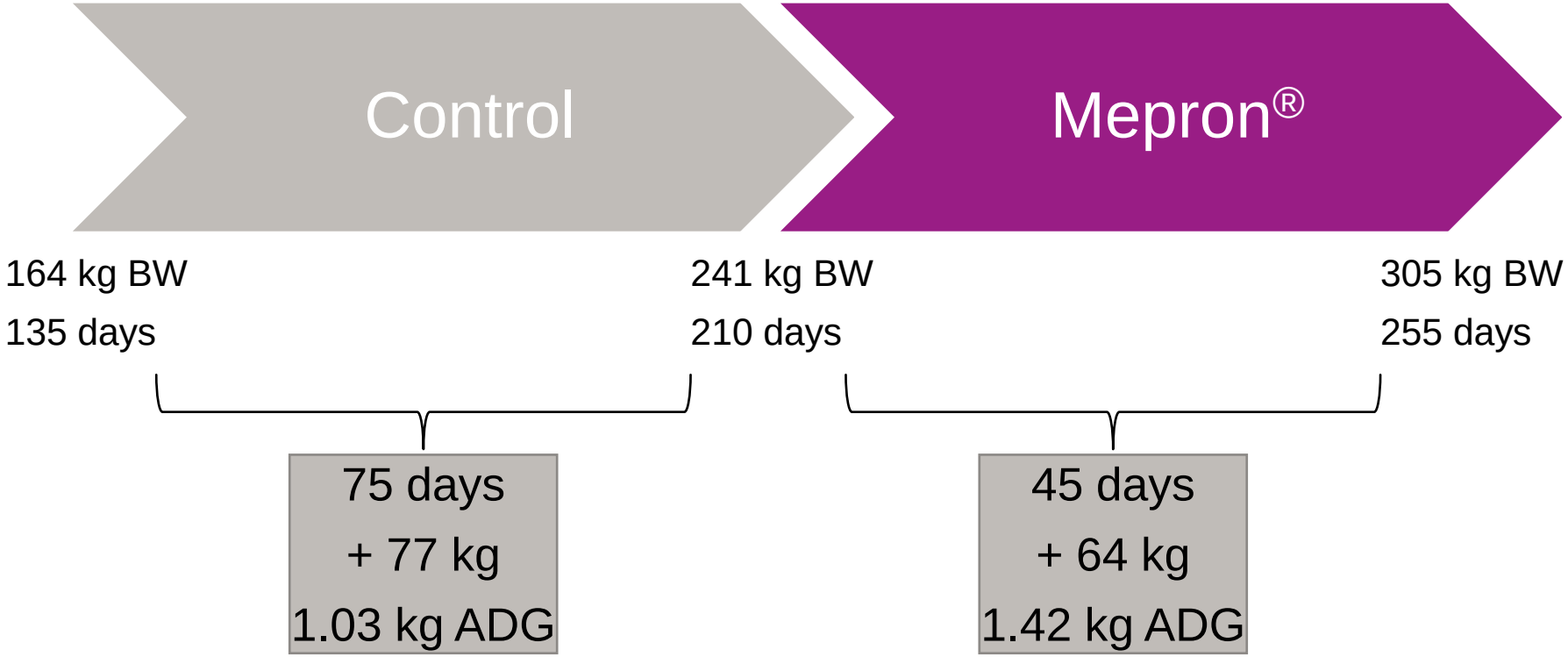
Details on Zhao et al (2019) – Results

- Mepron® decreased urinary N → lower N_2O emissions
- Mepron® increased N retention → higher ADG

Parameter	Control	Mepron® 10 g	Mepron® 20 g	Mepron® 30 g	SEM	P-Value
N intake (g/d)	133.7	134.4	135.1	135.8	-	-
Fecal N (g/d)	50.8	51.3	52.1	55.7	1.48	0.112
Urinary N (g/d)	52.4^{a}	46.2^{ab}	44.0^{b}	40.4^{b}	2.55	0.017
N retention (g/d)	**30.5**	**36.9**	**39.0**	**39.7**	**3.25**	**0.065**
ADG (kg/d)	**0.57^{b}**	**0.83^{ab}**	**0.87^{a}**	**0.90^{a}**	**0.10**	**0.033**
Urine N_2O-N (mg/d)	**408.9^{a}**	**329.2^{b}**	**313.2^{bc}**	**275.6^{c}**	**16.02**	**< 0.001**

Animals and Experimental Design

- 38 Holstein Friesian steers



Diets BEFORE and DURING Mepron® Supplementation

Ingredient (% DM)	BEFORE	DURING
Corn silage	17.4	25.2
Bread waste	24.0	23.5
Rolled barley	19.7	17.1
Crimped corn	12.3	13.4
Extruded rapeseed meal	13.5	6.5
Potato peels	3.7	3.7
Straw	6.1	6.6
Urea	0.87	1.23
Minerals[1]	2.68	2.90

[1] Includes 0.08kg/head enzyme

+ 6 g/d Mepron®

Data Analyses

- Diets analysed with NDS ration formulation software
- Input = Observed performance data, predicted DMI
- Feed ingredient analyses adapted to fit the on-farm diet analyses
- Prediction of ADG with NDS and comparison with observed performance

Results

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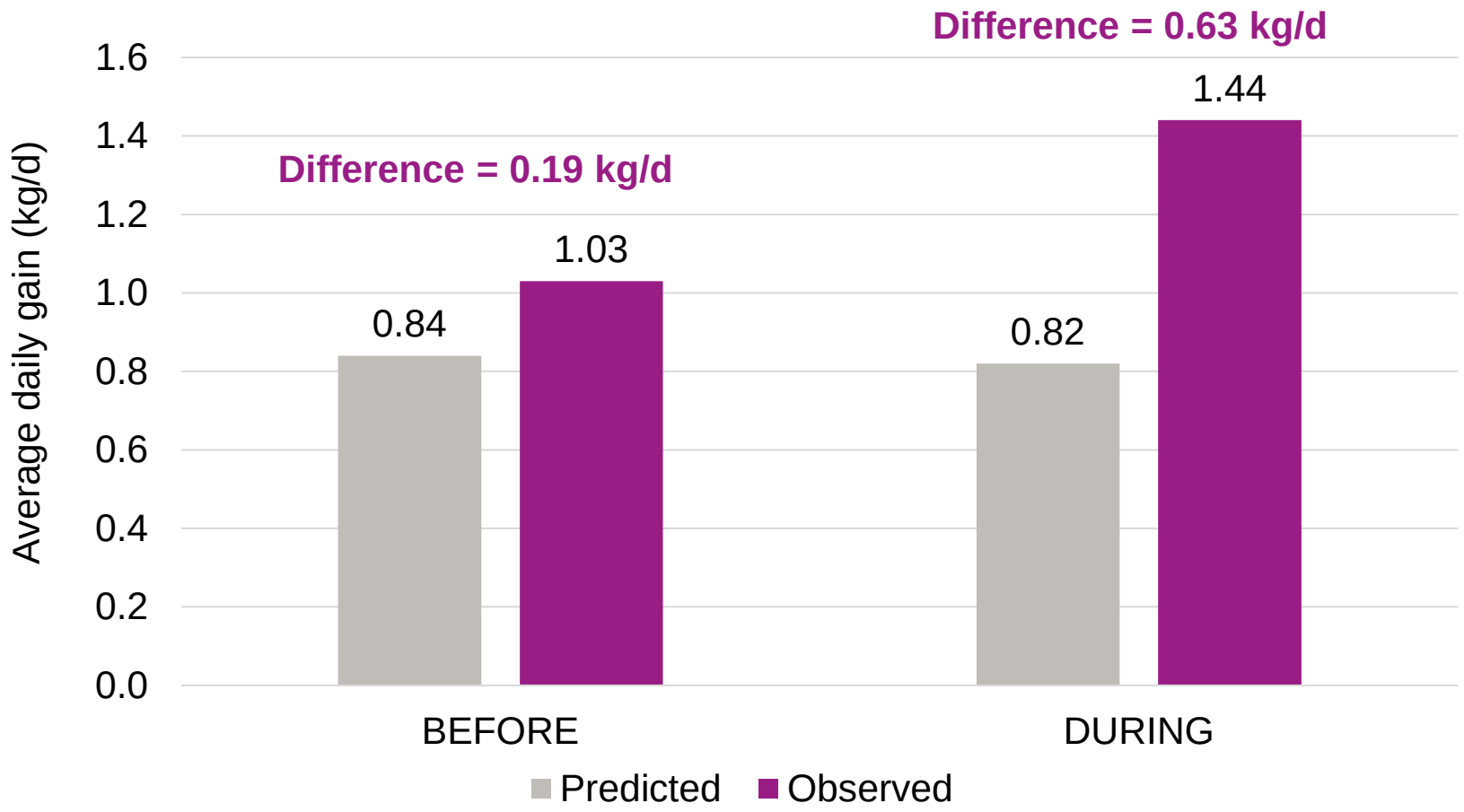
Details on Diets BEFORE and DURING Mepron® Supplementation

Item	BEFORE	DURING
Predicted DMI (kg/d)	5.50	6.55
CP (% DM)	16.3	15.3
Starch (% DM)	35.8	36.8
ME balance (%)	93.1	77.9
MP balance (%)	119.8	106.4
Lys:Met	2.86	2.38
mMET balance (%)	161.3	174.3
mLYS balance (%)	134.1	120.7

Predicted ADG with NDS ration formulation software



- The difference between observed and predicted ADG during Mepron® supplementation is an indicator of the beneficial effect of Mepron® on ADG on fattening steers.
- **With 6 g Mepron® per day, the increase in ADG was about 400 g/d.**

Conclusions

- Amino acid balancing reduced diet costs by £13.52/ tonne feed (FW)
- Reducing crude protein and lowering Lys: Met with Mepron® can improve performances of fattening steers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