University of Saskatchewan

Automatic Milking System Feeding Management Strategies

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Dairy Info Day 2018

Audience poll

- Does increasing the concentrate provided in the automated milking system increase milking frequency and production responses?

Introduction

- Offering highly palatable concentrates in automatic milking systems encourages the motivation of cows to enter the individual milking stall

- Current AMS feeding strategy recommendations
  - Feeding large quantities of concentrate in the AMS increases AMS visits, milk yield and milk composition

- **Despite these recommendations, there is no scientific merit**

- Thus, the need to comprehensively evaluate feeding management strategies to enhance the welfare, productivity, and resulting profitability with AMS

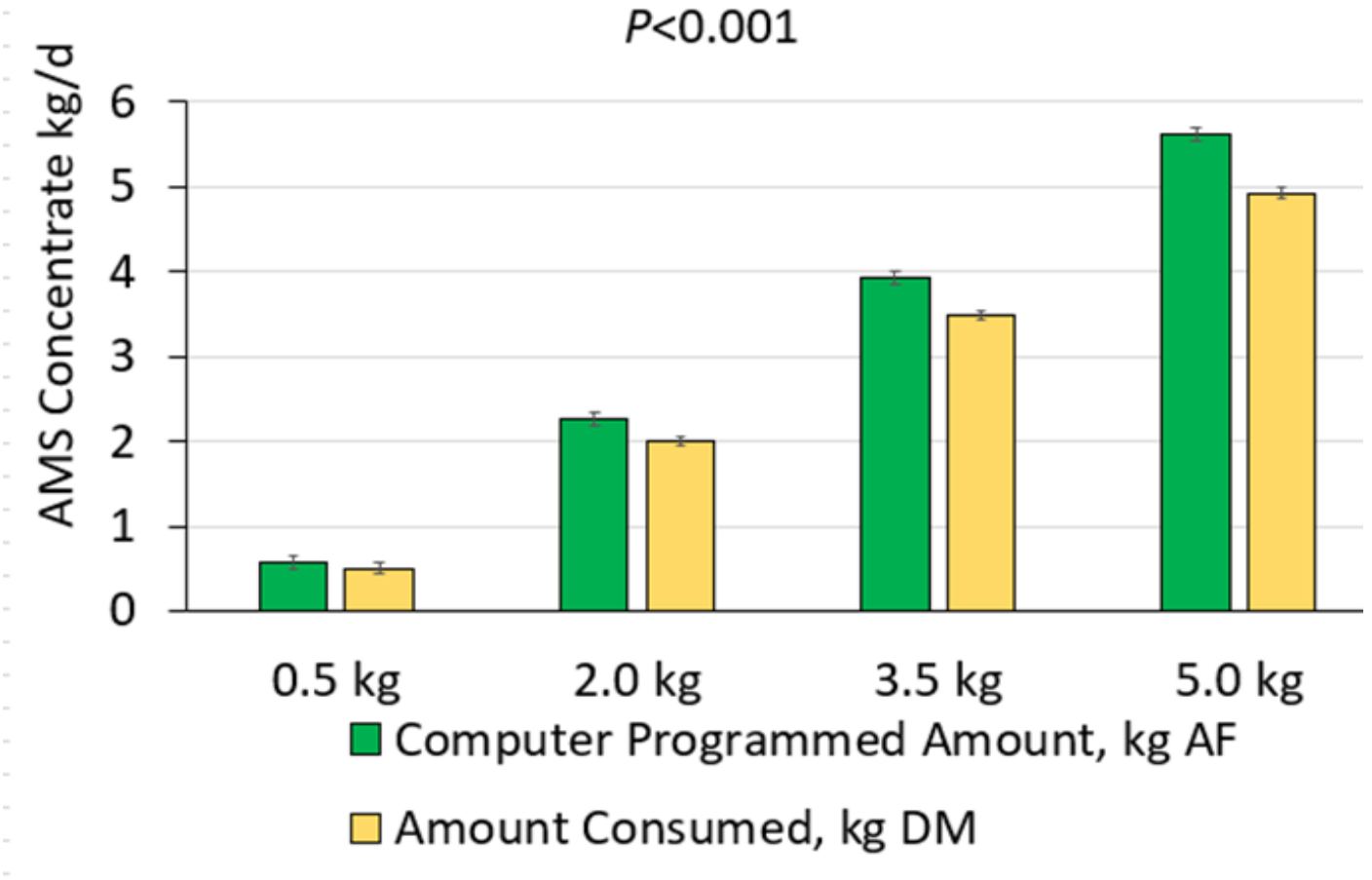
When feeding iso-nutrient diets: Does the location of the concentrate matter?

- Treatments (dry matter basis)
  - 0.5 kg
  - 2.0 kg
  - 3.5 kg
  - 5.0 kg

- PMR provision to ensure that nutrient densities and forage to concentrate ratios among all treatments were consistent

- Measurements
  - Milk frequency, yield and composition
  - Dry matter intake

When feeding iso-nutrient diets: Does the location of the concentrate matter?



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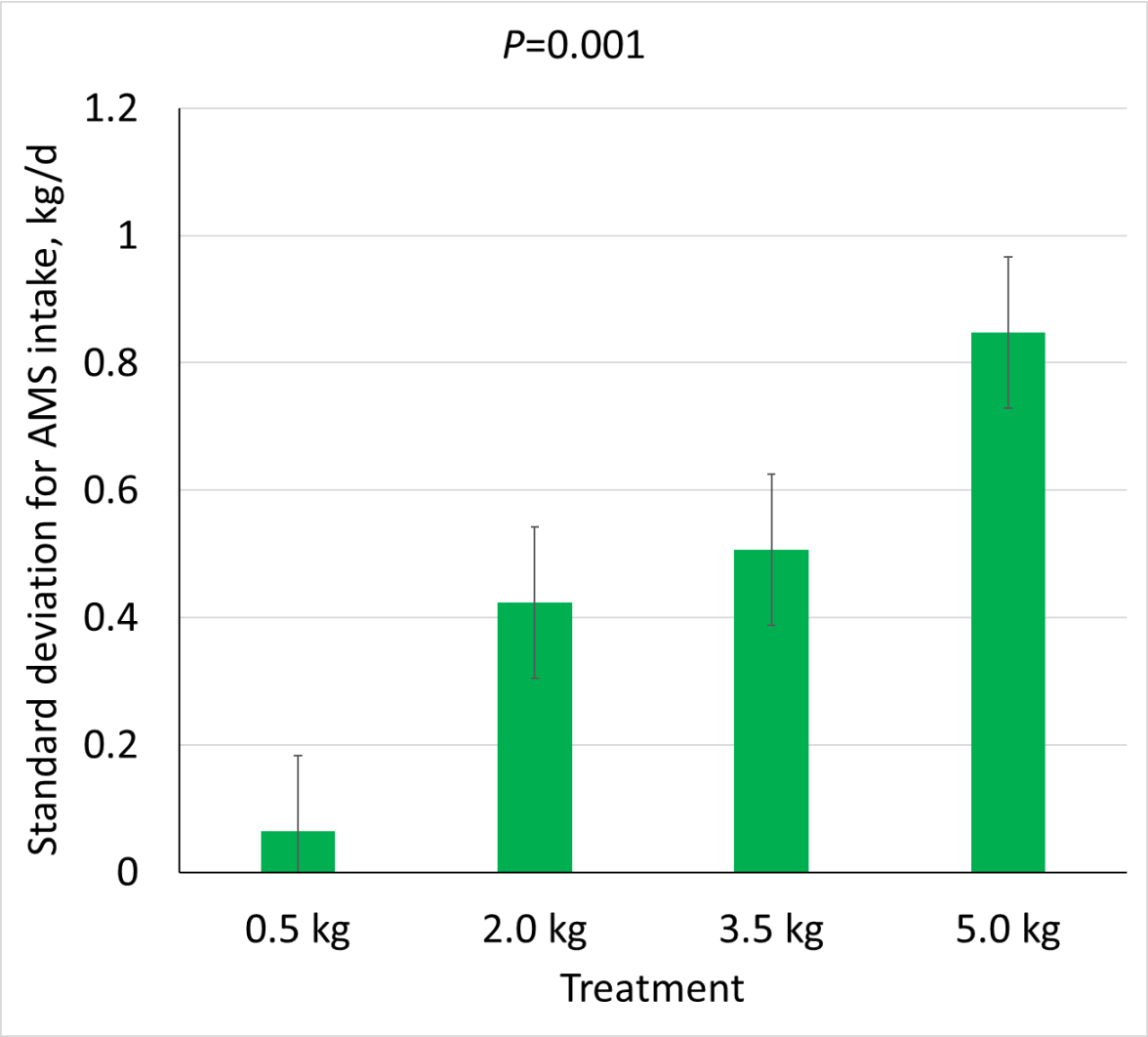

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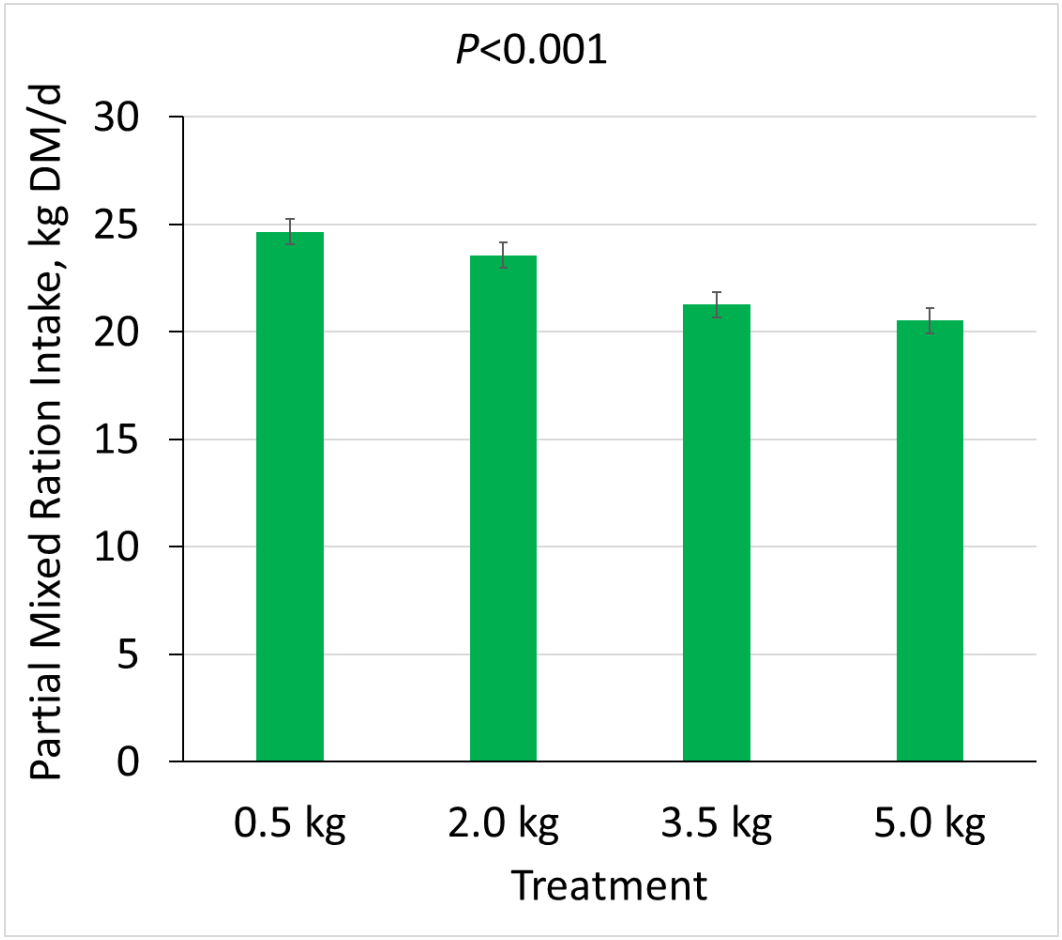

For every 1 kg increase in the AMS, PMR DMI decreased by 0.97 kg

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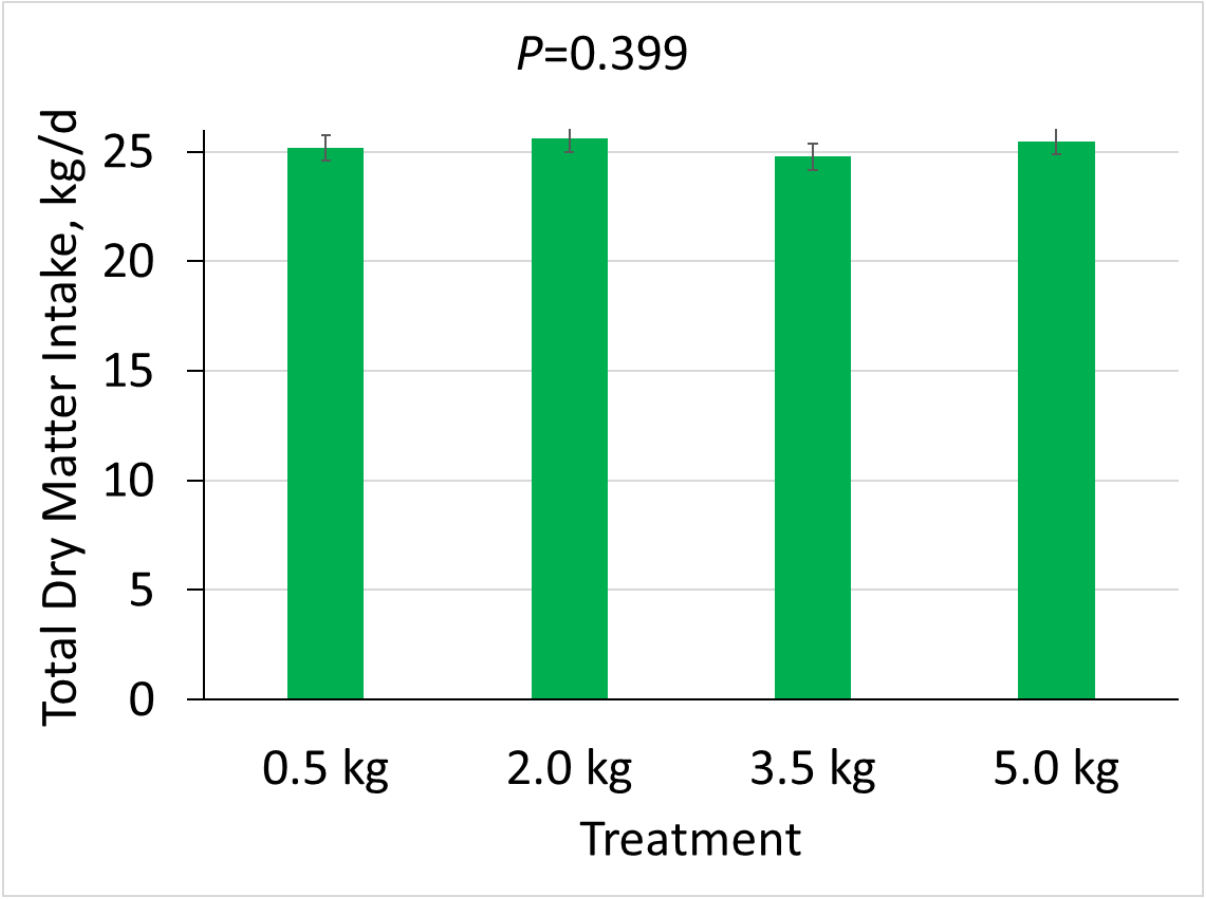

When feeding iso-nutrient diets: Does the location of the concentrate matter?

	Treatment					
Variable	**0.5 kg**	**2.0 kg**	**3.5 kg**	**5.0 kg**	**SEM**	***P*-value**
Milking frequency, no/d	3.2	3.3	3.1	3.3	0.17	0.31
Milk yield, kg/d	37.7	37.6	37.3	37.0	2.64	0.96
Fat, kg/d	1.45	1.44	1.46	1.40	0.06	0.72
Protein, kg/d	1.23	1.26	1.20	1.21	0.06	0.58
MUN, mg/dL	17.40[a]	16.92[a]	17.13[a]	16.10[b]	0.56	0.049

Do the energy density of the PMR and amount of concentrate affect production outcomes?

- Treatments were arranged in a 2 × 2 factorial design
  Main factors
  - F:C of the PMR
    Low FOR → F:C=54:46
    High FOR → F:C=64:36
  - Amount of Concentrate in the AMS
    Low AMS → 2 kg Concentrate
    High AMS → 6 kg Concentrate

L-FOR PMR – High AMS (58% C)

L-FOR PMR – Low AMS (50% C)

H-FOR PMR – High AMS (50% C)

H-FOR PMR – Low AMS (42% C)

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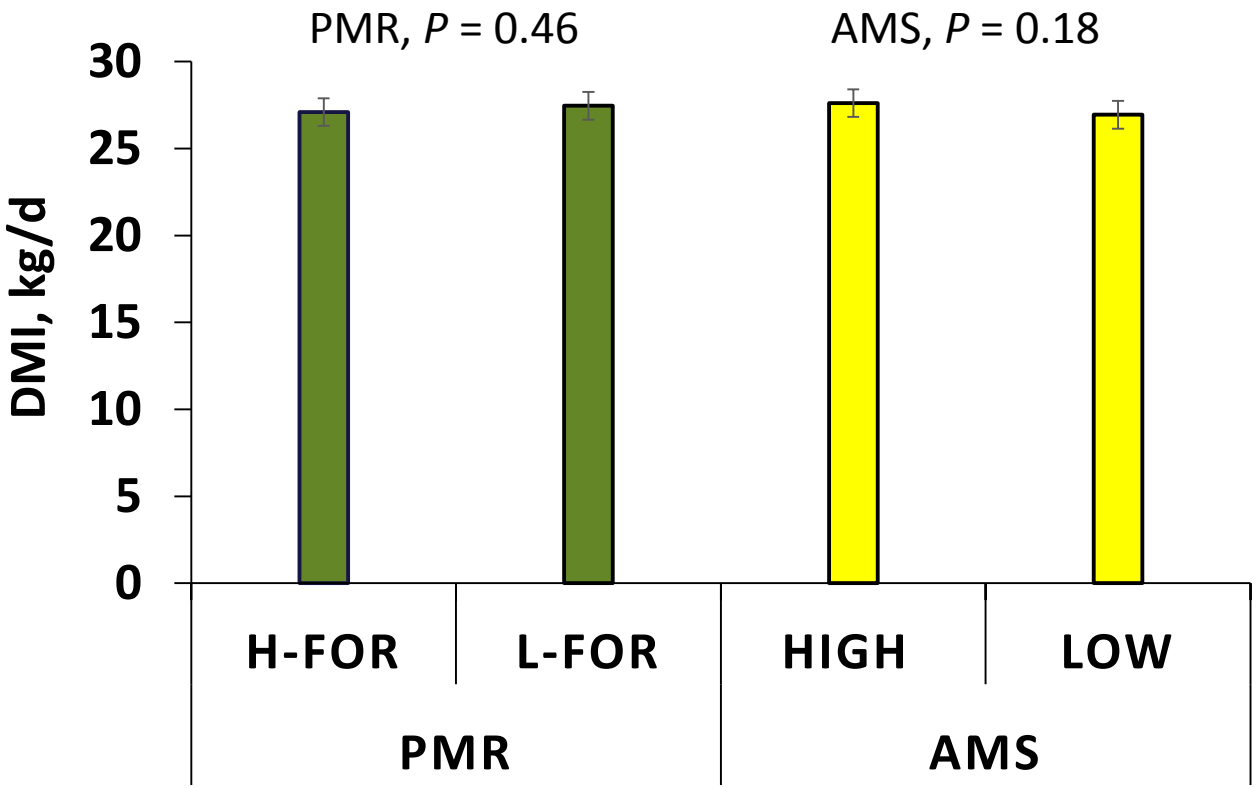

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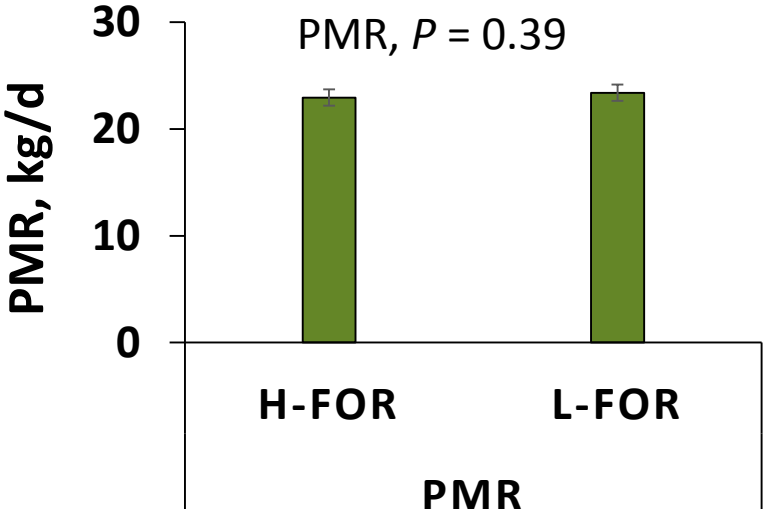

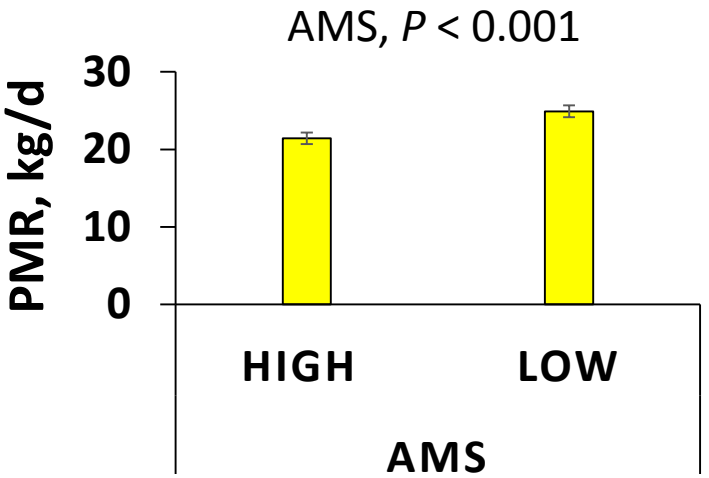

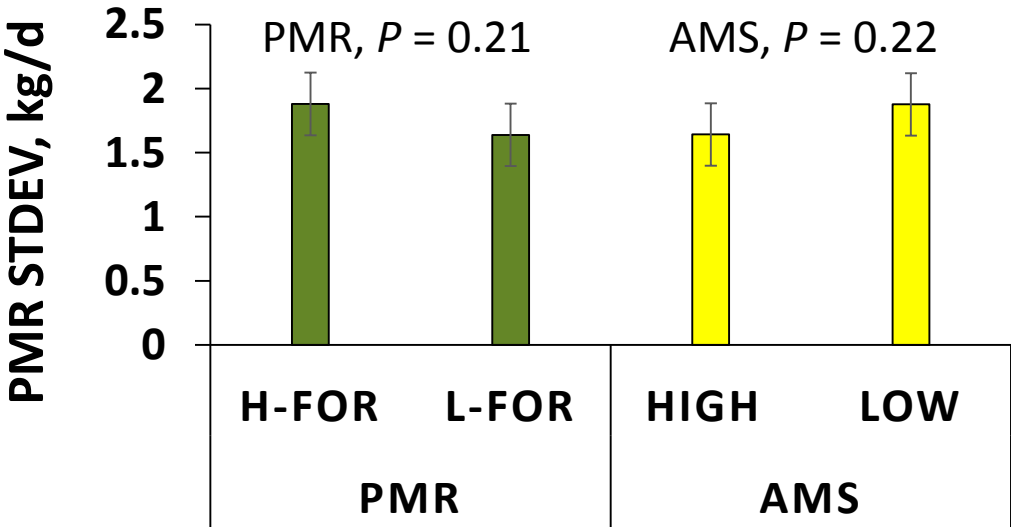

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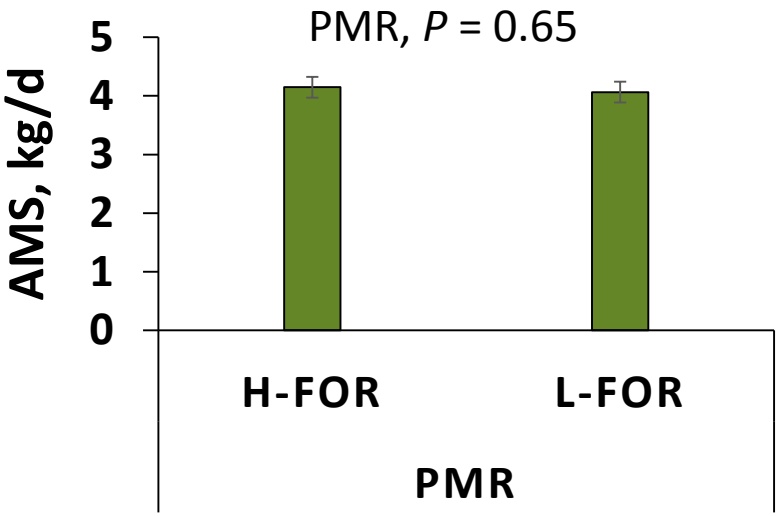

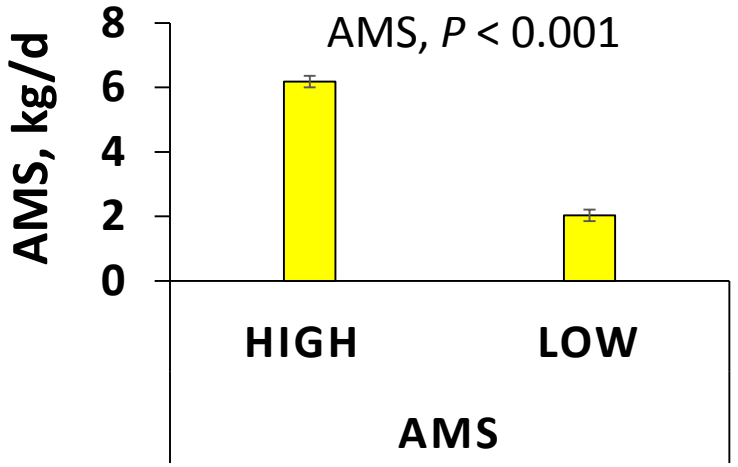

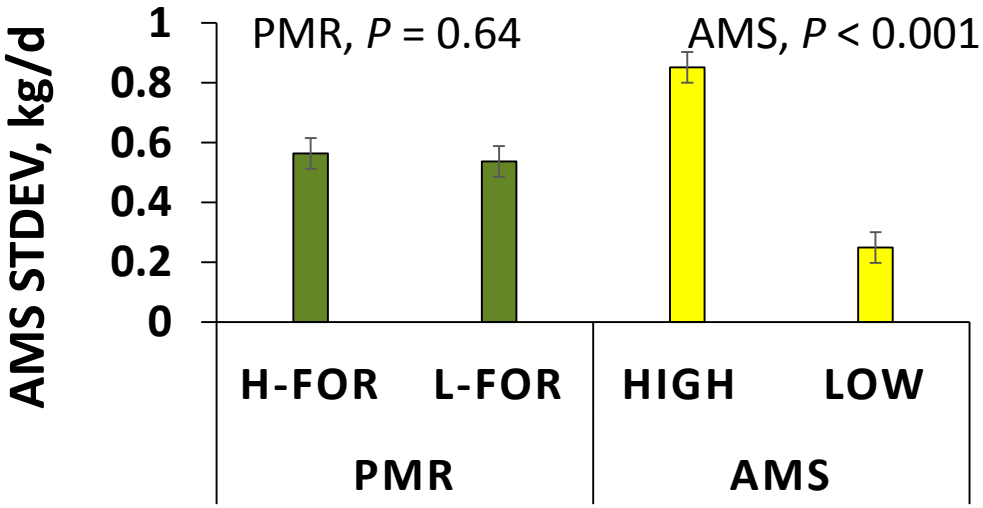

Do the energy density of the PMR and amount of concentrate affect production outcomes?

	PMR		AMS			P value	
Variable	H-FOR	L-FOR	High	Low	SEM	PMR	AMS
Milking frequency, no./d	3.59	3.66	3.69	3.56	0.15	0.412	0.110
Yield, kg							
Milk	37.9	39.2	39.2	38.0	2.0702	0.095	0.102
Crude protein	1.22	1.26	1.27	1.21	0.06	0.101	0.072
Fat	1.36	1.36	1.36	1.37	0.07	0.930	0.758

Does increasing the concentrate provided in the automated milking system increase milking frequency and production responses?

Take Home Messages

- Increasing the AMS concentrate allocation decreases PMR intake

- Increasing AMS concentrate allocation increases concentrate consumption
  - The programed amount of concentrate has to exceed the amount targeted
  - Variability in AMS concentrate intake occurs among days reducing ability for precision feeding

- Increasing concentrate provision may improve daily milk yield but may not improve milking frequency.

- Increasing the nutrient density improves milk yield.

Acknowledgments

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THANK YOU!

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