



Recommendations for amino acids in NorFor

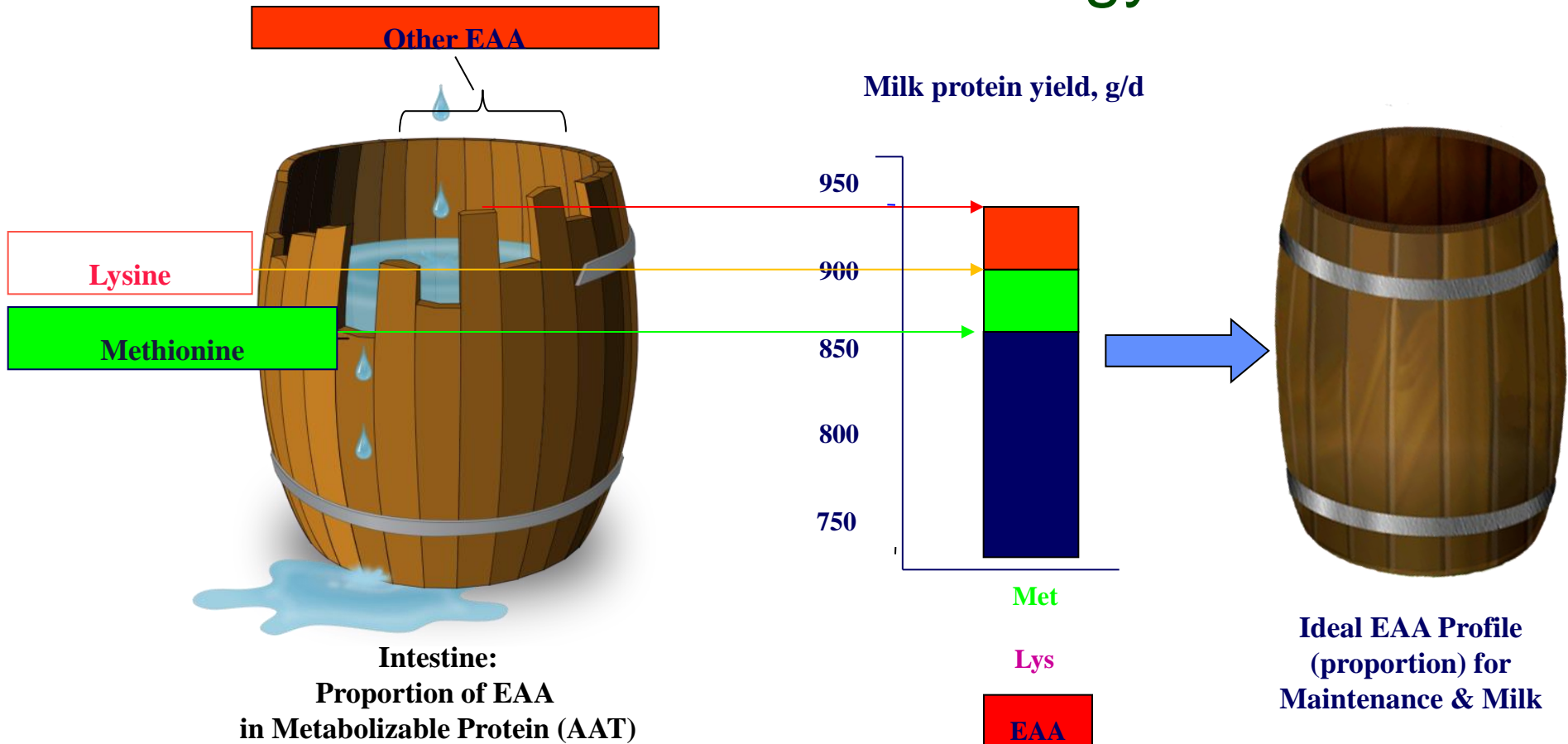
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Projektet har fået tilskud fra "Grønt Udviklings- og Demonstrations Program, GUÐP under Fødevareministeriet".

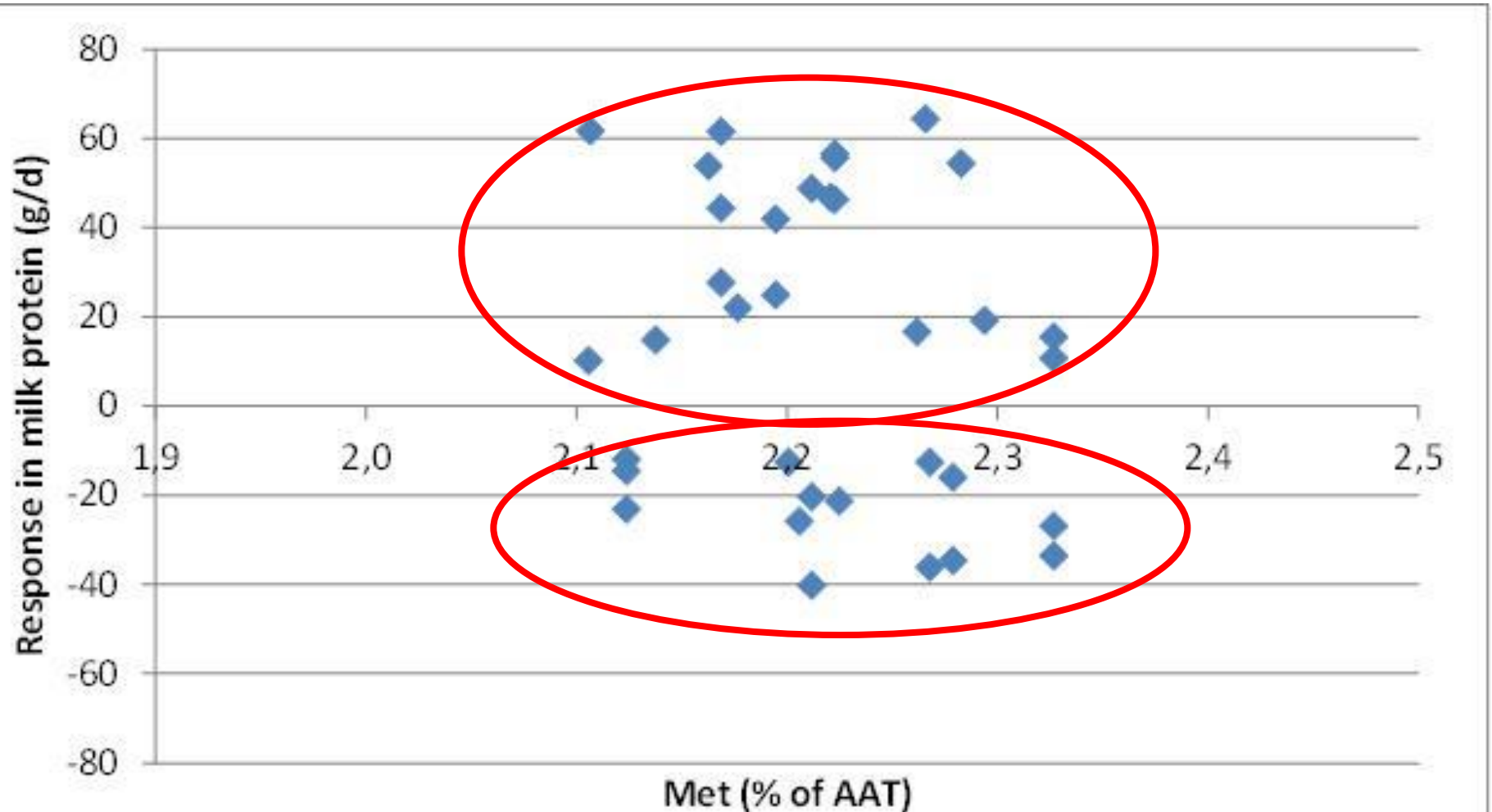
Ideal essential amino acid (EAA) profile: Barrel stave analogy



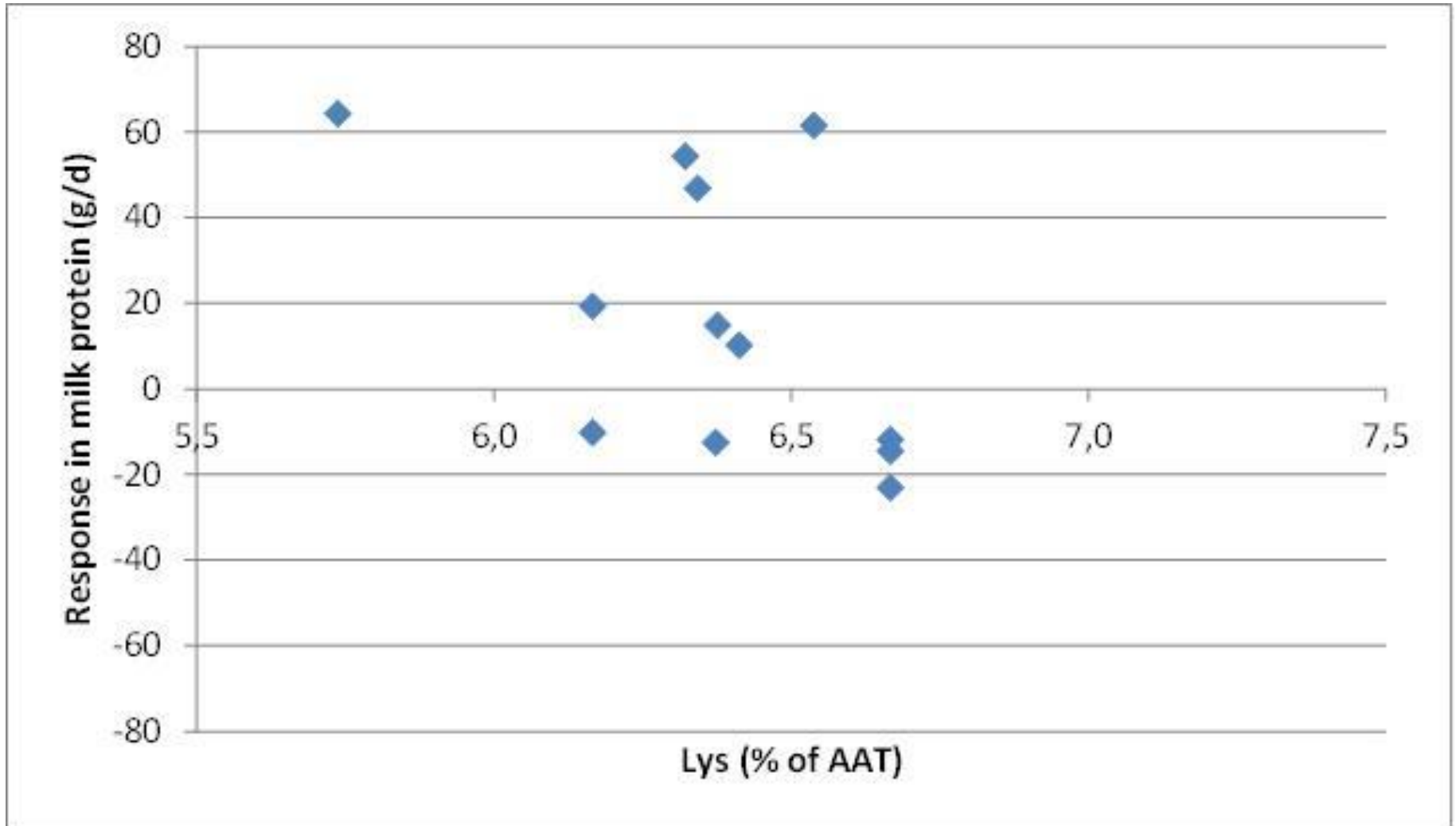
Method

- **Production trials with rumen protected Met or/and –Lys from the literature (>1990)**
- **Bioavailability from 30 to 85% depending on product**
- **Infusion trials with eAA**
- **Develop response functions**

Effect of rumen protected metionine (n=35)



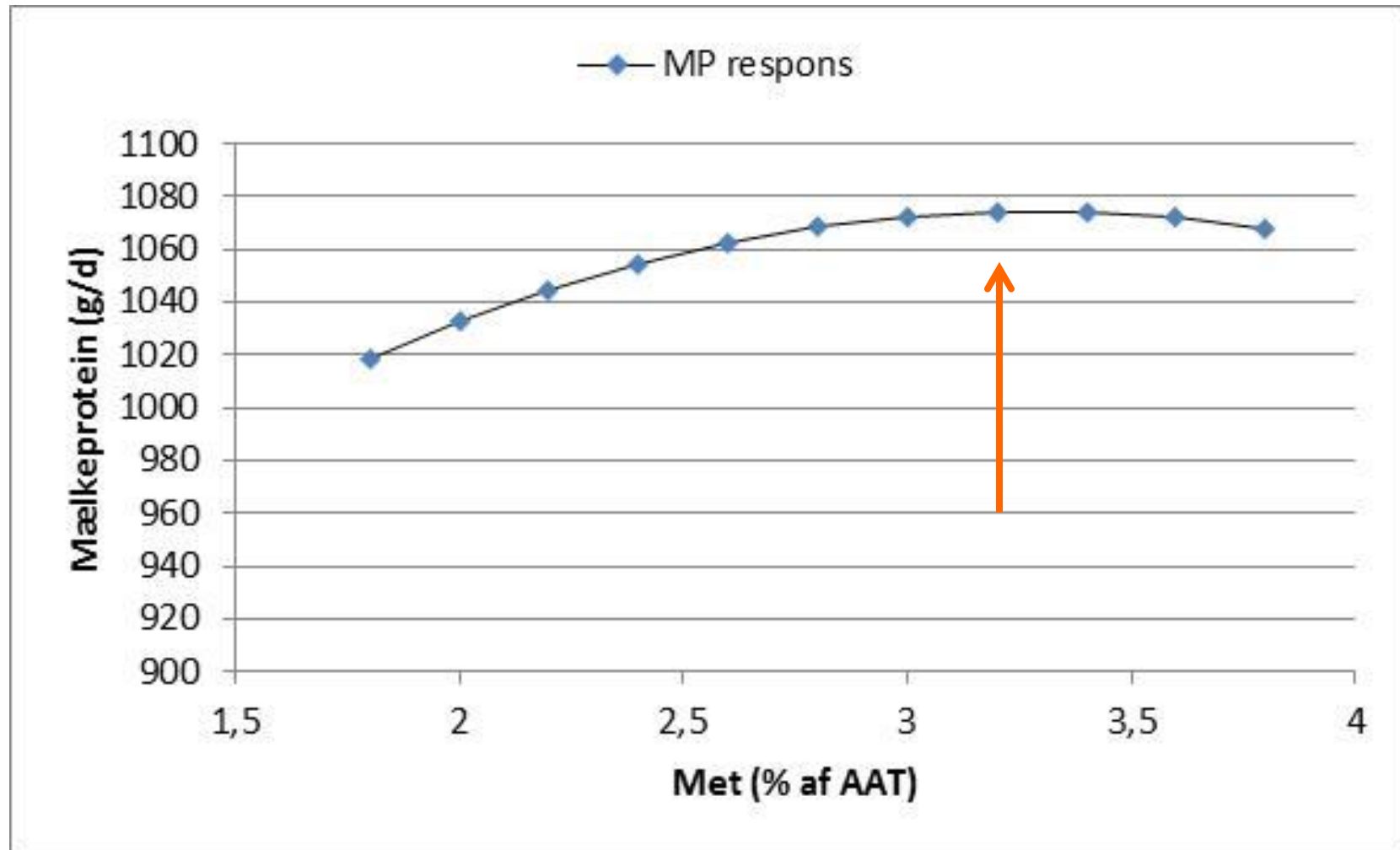
Effect of rumen protected lysine (n=12)



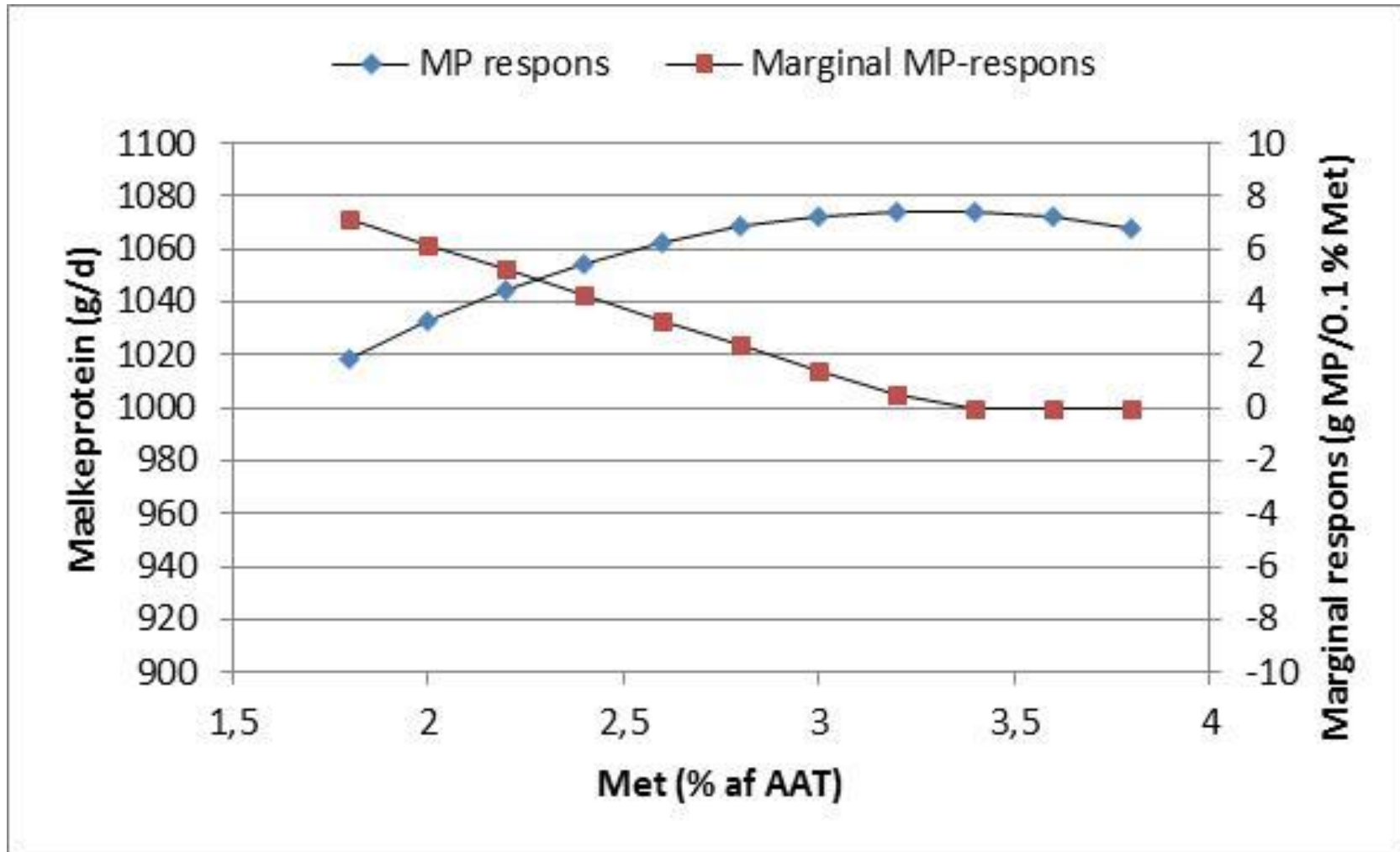
Conclusion

➤ **No clear effect of rumen protected Met & Lys**

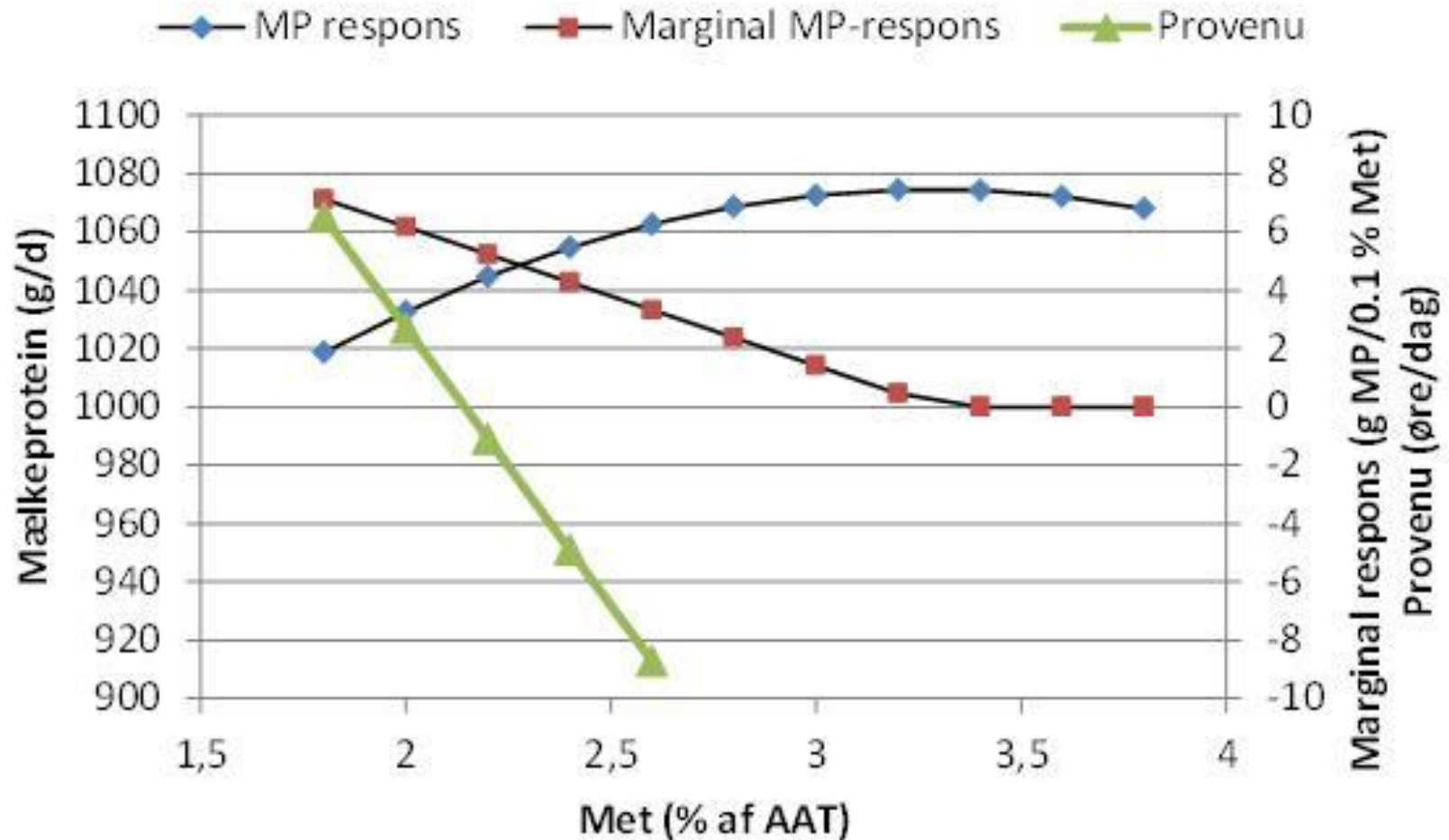
Response to metionine (n=63)



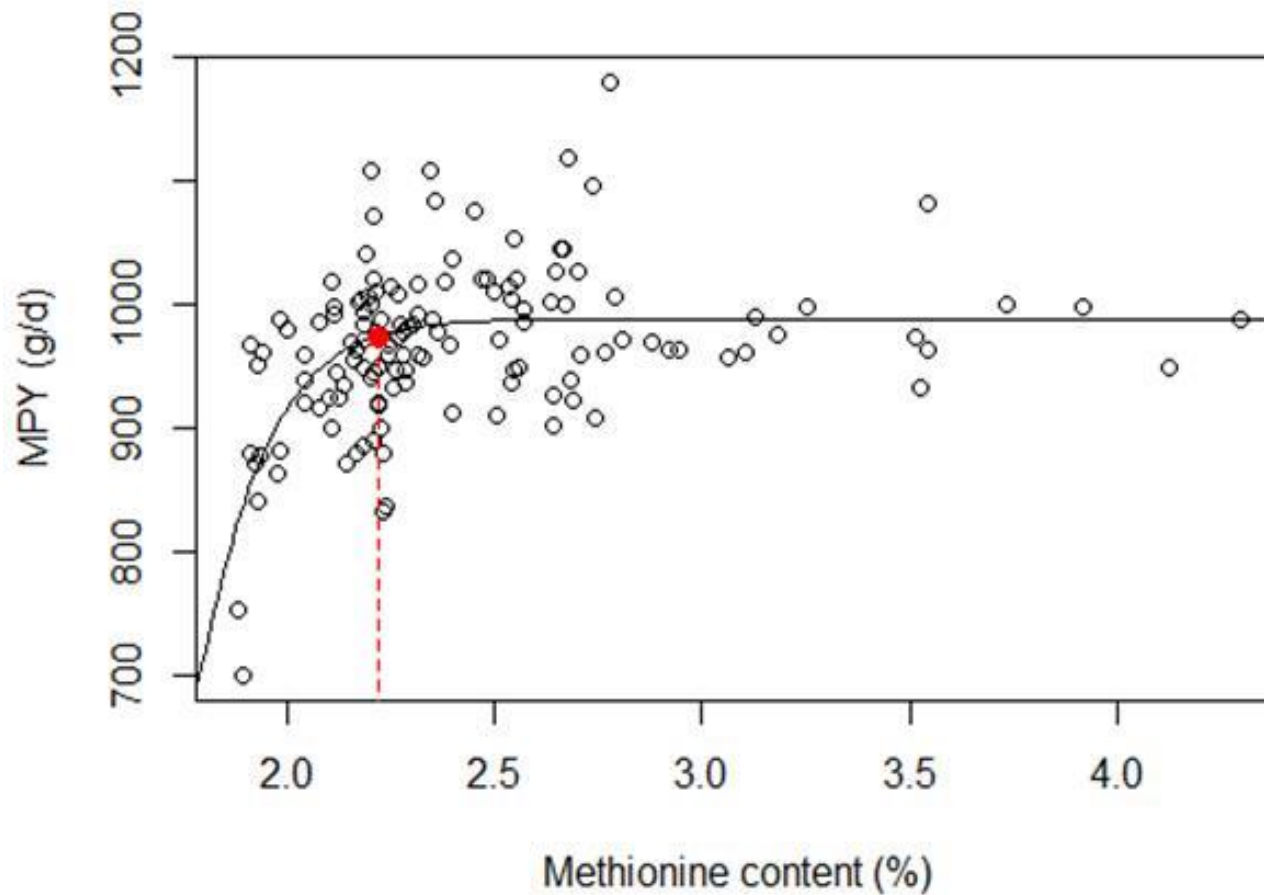
Marginal response to metionine (n=63)



Economic optimum



Optimum for Methionine (n=128)



Recommendations

- Based on response-function economic optimum for Met is 2.20% of AAT
- Based on logistic regression optimum is 2.20% of AAT
- Histidine has shown to be limiting in grass based diets – the recommendation is 2.20% of AAT
- Lys is set to $2.9 \times \text{Met} = 6.4\%$ of AAT

Supplementing Low CP Diets with Rumen-Protected Met, Lys & His (Lee et al., 2012)

Item	Metabolizable Protein				Prob.
	Adequate	Deficient	Def+ML	Def+MLH	
CP, %	15.7	13.6	13.6	13.6	
MP (NRC), kg/d	2.66	2.08	2.15	2.20	
<u>Production</u>					
DMI, kg/d	24.5	23.0	23.7	24.3	0.06
Milk, kg/d	38.8 ^a	35.2 ^b	36.9 ^{ab}	38.5 ^a	<0.01
Protein, kg/d	1.13 ^a	1.01 ^b	1.10 ^a	1.14 ^a	<0.01

Supplemented 18, 24 & 12 g/d of Rumen-Protected Met, Lys & His

Supplementing Low CP Diets with Rumen-Protected Met, Lys & His (Lee et al., 2012)

Item	Dietary Metabolizable Protein			
	Adequate	Deficient	Def+ML	Def+MLH
CP, %	15.7	13.6	13.6	13.6
AAT, kg/d	2.50	2.12	2.25	2.33

[EAAi] in AAT

					<u>Minimum</u>
Met, %	2.1	2.2	2.9	2.8	2.2
Lys, %	6.7	6.6	7.4	7.4	6.4
His, %	2.5	2.5	2.5	2.8	2.2

Supplemented 18, 24 & 12 g/d of Rumen-Protected Met, Lys & His