Fresh grass-clover intake in summer and energy requirements of organic sows in winter and summer

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Introduction

Organic sows on pasture ingest a considerable amount of protein from grazing in summer and from silage intake in winter. However, these contributions are normally not taken into account when formulating basal diets for organic sows, hence the animals might be oversupplied with protein. Protein oversupply is an environmental challenge due to nitrogen leaching, it is costly to the farmer in terms of bought-in soy and the excess nitrogen might affect the energy utilization of organic sows negatively.

Materials and methods

- 47 organic LY sows on pasture
- 1st parity: winter, 2nd parity: summer
- Two protein levels; 12.8% or 14.7% of DM
- Diets were iso-energetic; 14 MJ ME/d
- Summer; Ad lib access to grass-clover
- Winter; Ad lib. access to grass-clover silage
- Blood samples; Jugular vein puncture in early (d-55) and late (d-15) of gestation and at early (d5), peak (d20) and late (d40) lactation
- Milk samples collected on d5, d20 and d40
- Daily voluntary fresh grass clover intake estimated by the use of plasma Pipecolic acid
- Body pools of fat and protein determined by the deuterium dilution method
- Locomotory activity and pulse were measured with a heart rate monitor and a GPS tracker

Main findings

Dietary effect:

- Sows on the low protein strategy ingested 14% or 31 g/d more of DM from grass-clover than the control fed sows (P=0.05).
- Milk casein was lower in the low protein group (P<0.001)

No effect of 12% reduced dietary protein on:

- Live born, stillborn, litter size or daily litter gain
- Milk composition: DM, lactose, fat, energy
- Plasma metabolites: creatinine, glucose, urea, lactate, triglyceride or NEFA

Seasonal effect:

- There were 3.3 more liveborn piglets per litter in first compared to second parity (P=0.005)
- Sows gained 54 kg from first to second parity
- There was a tendency to more fat in sows milk in winter (P=0.08)
- The energy demand for thermoregulation corresponded to 20% and 5% of the daily energy requirements in winter and summer, respectively
- The energy demand for physical activity constitutes 4-5% of the total daily energy requirement in both winter and summer

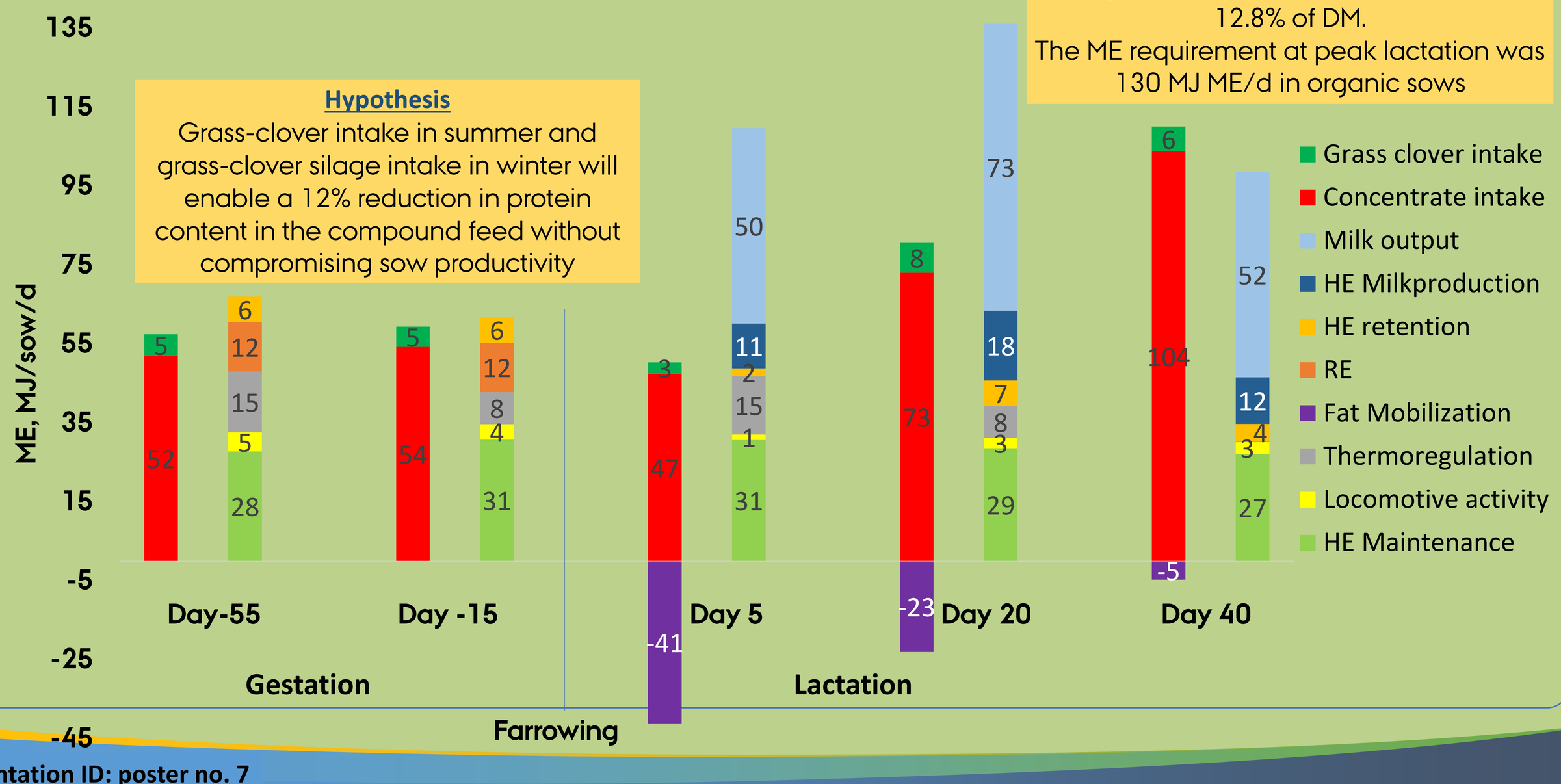
	Season (parity)			Protein level			P-value	
	Winter (1st)	Summer (2nd)	SEM	Control	Low	SEM	Season (Parity)	Protein level
Liveborn	13.5[b]	16.8[a]	0.50	15.1	15.2	0.49	<0.01	NS
Stillborn	2.10	2.17	0.64	2.59	1.69	0.64	NS	NS
Birthweight, g	1320[b]	1509[a]	30.2	1413	1416	30.8	<0.01	NS
Weaning weight, kg	14.6	16.1	1.07	15.5	15.2	1.07	NS	NS
Littersize, weaning	10.9[b]	12.6[a]	0.29	11.7	11.9	0.30	<0.01	NS
Milk yield, kg/d	12.1	12.3	0.36	11.1	11.3	0.36	NS	NS

Hypothesis

Grass-clover intake in summer and grass-clover silage intake in winter will enable a 12% reduction in protein content in the compound feed without compromising sow productivity

Conclusion

The intake of fresh grass-clover was 0.42 kg DM/d or 5.3 MJ ME/d in pregnant sows
There was no effect on productivity of reducing the protein content in iso-energetic compound feed from 14.7% to 12.8% of DM.
The ME requirement at peak lactation was 130 MJ ME/d in organic sows



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