Introduction

- In the 7 days prior to giving birth, the pregnant sow requirements for energy increase by 60% and by 142% for the amino acid lysine. 
- These increases support the increased fetal and sow mammary growth. Mammary growth is important for colostrum and milk production.

Objective

- Determine the effect of increasing lysine (an essential amino acid) and energy intake the last 7 or 3 days before farrowing on colostrum yield, composition, and immunoglobulin G concentration.

Experimental Design

- On d 106 of gestation, a total of 472 mixed parity sows were weighed and randomly assigned to dietary treatments based on farrowing date, weight and parity:
  - Treatment 1 (control):
    - d 107 to 112: 12.5 g SID Lys and 6.5 Mcal ME
    - d 113 to farrow: 28 g SID Lys and 13.3 Mcal ME
  - Treatment 2 (d 113):
    - d 107 to 112: 12.5 g SID Lys and 6.5 Mcal ME
    - d 113 to farrow: 40 g SID Lys and 13.3 Mcal ME
  - Treatment 3 (d 107):
    - d 107 to farrow: 40 g SID Lys and 13.3 Mcal ME

Materials and Methods:

- After birth of the first piglet, 50 mL of colostrum was collected from multiple teats
- Individual piglets were weighed at birth and 24 h to determine colostrum intake and yield
- Samples were analyzed for fat, protein, total solids, and lactose at a DHIA lab (Stearns Lab, Sauk Centre, MN)
- Immunoglobulin G was determined using an ELISA (enzyme-linked immunosorbent assay) kit
- Data was analyzed for treatment effects and treatment within parity effects using a mixed model (PROC GLIMMIX SAS, Version 9.4; Cary, NC)

Results

<table>
<thead>
<tr>
<th>Response</th>
<th>Gilts</th>
<th>Sows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count, n</td>
<td></td>
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</tr>
<tr>
<td>Fat, %</td>
<td></td>
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<tr>
<td>Protein, %</td>
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<tr>
<td>Solids, %</td>
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<tr>
<td>Lactose, %</td>
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<tr>
<td>IgG2, mg/ml</td>
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<tr>
<td>Colostrum yield, kg</td>
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<tr>
<td>Colostrum intake, g</td>
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</tbody>
</table>

Conclusion

- Sows fed treatment 3 (d 107) had decreased fat and total solids compared to treatment 1 (control) sows, with no evidence for differences in gilts
- Immunoglobulin G concentrations tended to increase in females fed treatment 2 (d 113) compared to treatment 1, regardless of parity
- Total protein, lactose, colostrum intake and yield were similar across treatments
- Feeding high lysine and energy for 7 d before farrowing decreased colostrum fat and solids of sows, but no evidence of an impact on other colostrum nutrients or yield