

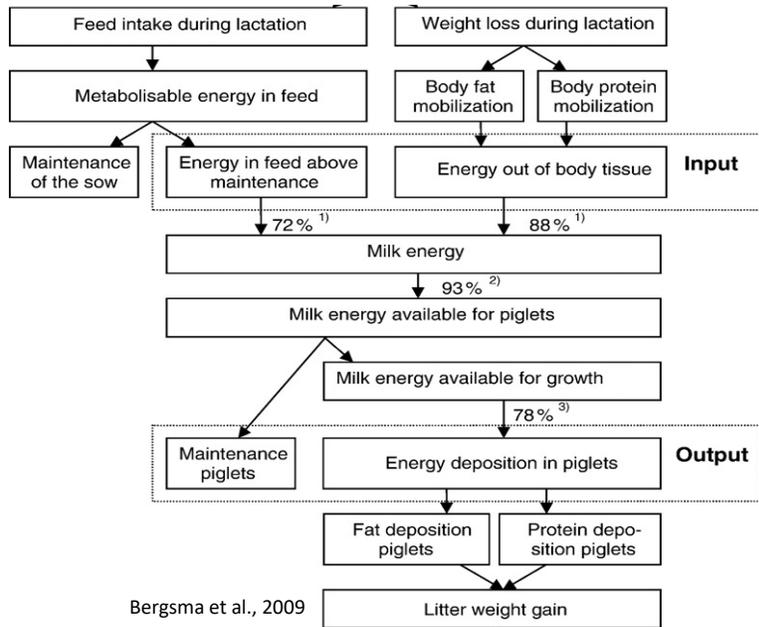
# Early- and mid- lactation milk traits are associated with piglet growth during lactation

Lea A. Rempel, William T. Oliver, and Jeremy R. Miles  
 USDA, ARS, USMARC, Clay Center, NE, USA, 68933

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## Introduction



The objective for the current study was to evaluate the components within milk and determine their relationship to piglet growth during lactation.

## Materials & Methods

Whole milk samples were collected from 48 dams (parities 1 through 4) on d2 and d16 lactation. Milk samples were analyzed for various traits. Each milk trait was categorically identified at 25, 50 or 75 percentiles as Low, Moderate, or High; respectively. Piglets were weighed within 24 hours of birth, d10, and weaning; WN (24d).

Mixed models (SAS); dam repeated, sire random, and adjusted for parity, litter size, and farrowing week; were used to determine association of individual milk traits with piglet lactation growth (gain calculated from body weights at birth, d10, and WN).

## Results

Table 1. Relationship of d2 or d16 milk trait categories with piglet weight gain during lactation (birth to WN).

Milk Trait	Low	Moderate	High
d2 Protein, kg	6.6 ± 0.20 <sup>a</sup>	7.0 ± 0.17 <sup>b</sup>	6.5 ± 0.21 <sup>a</sup>
d2 Fat, kg	7.1 ± 0.22	6.7 ± 0.16	6.8 ± 0.21
d2 SCC, kg	6.9 ± 0.20	7.0 ± 0.18	6.5 ± 0.19
d2 Lactose, kg	6.7 ± 0.22 <sup>a</sup>	6.8 ± 0.15 <sup>a</sup>	7.2 ± 0.23 <sup>b</sup>
d2 Solids, kg	6.7 ± 0.20 <sup>a</sup>	6.8 ± 0.18 <sup>a</sup>	7.2 ± 0.22 <sup>b</sup>
d2 Total Solids, kg	7.0 ± 0.23	6.7 ± 0.16	6.8 ± 0.20
d2 MUN, kg	6.8 ± 0.22	6.7 ± 0.17	6.8 ± 0.19
d16 Protein, kg	6.7 ± 0.20	6.9 ± 0.17	6.7 ± 0.19
d16 Fat, kg	6.5 ± 0.19 <sup>a</sup>	6.7 ± 0.16 <sup>a</sup>	7.1 ± 0.17 <sup>b</sup>
d16 SCC, kg	6.8 ± 0.19	6.8 ± 0.15	6.4 ± 0.22
d16 Lactose, kg	6.5 ± 0.18	6.9 ± 0.16	6.9 ± 0.19
d16 Solids, kg	6.5 ± 0.19 <sup>a</sup>	6.9 ± 0.15 <sup>b</sup>	6.9 ± 0.23 <sup>b</sup>
d16 Total Solids, kg	6.6 ± 0.19 <sup>a</sup>	6.7 ± 0.16 <sup>a</sup>	7.1 ± 0.18 <sup>b</sup>
d16 MUN, kg	6.5 ± 0.20	6.9 ± 0.17	6.7 ± 0.19

Means with different superscript are different within rows ( $P < 0.05$ ).

Table 2. Relationship of d2 milk trait categories with early (birth to d10) piglet weight gain during lactation.

Milk Trait	Low	Moderate	High
d2 Protein, kg	2.1 ± 0.10 <sup>a</sup>	2.3 ± 0.08 <sup>b</sup>	1.9 ± 0.10 <sup>c</sup>
d2 Lactose, kg	2.0 ± 0.10 <sup>a</sup>	2.2 ± 0.08 <sup>b</sup>	2.3 ± 0.10 <sup>c</sup>
d2 Solids, kg	2.0 ± 0.09 <sup>a</sup>	2.2 ± 0.08 <sup>b</sup>	2.4 ± 0.10 <sup>c</sup>
d2 MUN, kg	2.4 ± 0.12 <sup>a</sup>	2.1 ± 0.10 <sup>b</sup>	2.1 ± 0.10 <sup>b</sup>

Table 3. Relationship of d2 or d16 milk trait categories with late (d10 to WN) piglet weight gain during lactation.

Milk Trait	Low	Moderate	High
d2 Fat, kg	4.8 ± 0.15 <sup>a</sup>	4.5 ± 0.11 <sup>b</sup>	4.8 ± 0.14 <sup>ab</sup>
d2 SCC, kg	4.7 ± 0.14 <sup>a</sup>	4.9 ± 0.12 <sup>a</sup>	4.3 ± 0.13 <sup>b</sup>
d2 Lactose, kg	4.7 ± 0.15 <sup>ab</sup>	4.6 ± 0.11 <sup>a</sup>	4.9 ± 0.16 <sup>b</sup>
d2 Solids, kg	4.6 ± 0.14 <sup>a</sup>	4.6 ± 0.11 <sup>a</sup>	4.9 ± 0.15 <sup>b</sup>
d16 Fat, kg	4.4 ± 0.12 <sup>a</sup>	4.4 ± 0.13 <sup>a</sup>	4.9 ± 0.12 <sup>b</sup>
d16 Total Solids, kg	4.5 ± 0.13 <sup>a</sup>	4.5 ± 0.11 <sup>a</sup>	4.9 ± 0.12 <sup>b</sup>

## Conclusions

- Moderate d2 milk protein levels was associated with piglet gain throughout lactation, suggesting a balance between dam feed efficiency and body tissue mobilization for milk production.
- Increased levels of d2 milk lactose and solids provided superior growth throughout all of lactation (early, late, and total).
- However in d16 milk, fat content was more influential for piglet growth during lactation.

**Sow milk components are influenced by stage of lactation and the components influence the growth potential of piglets preweaning.**