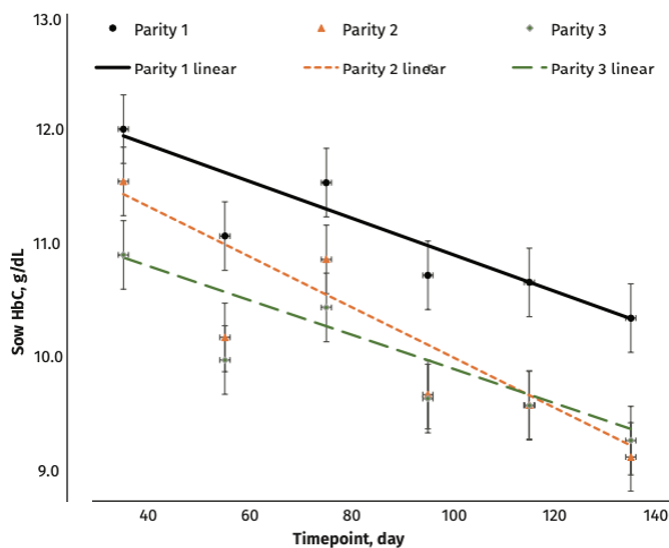


# SQM can improve iron status of sows and their litters

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## Sow anemia is chronic and affects performance

Anemia is not just a problem affecting piglets. Recent work has shown that iron status in sows is negatively correlated with both parity and day of gestation<sup>1</sup> (**Figure 1**), and that low iron status in sows is correlated with increased farrowing duration (7.2 hr vs 3.5 hr) and stillborn rate<sup>2</sup>. The purpose of this study was, therefore, to investigate the impact of different iron feeding forms on sow and litter iron status and performance.



**Figure 1.** Slope ratio comparison of sow hemoglobin concentration (HbC) across gestation and lactation by parity<sup>1</sup>.

## Litter

SQM-Fe tended to increase birth weight (1.48 vs 1.33;  $P = 0.096$ ). Suggests improved iron status of litters improves fetal growth.

## Design

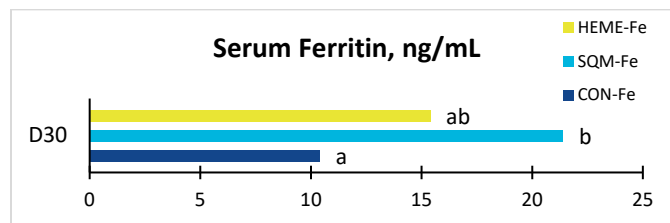
Three dietary treatments containing 125 ppm of supplemental iron were fed to 44 gestating sows (0 to 4th parity) from d0 of gestation through d18 of lactation:

- ▶ CON-Fe: 15 sows supplemented with FeSO<sub>4</sub>
- ▶ SQM-Fe: 15 sows supplemented with Fe Polysaccharide Complex
- ▶ HEME-Fe: 14 sows supplemented with 1:1 ratio of FeSO<sub>4</sub> and Spray Dried Bovine RBC

## Results<sup>3 4</sup>

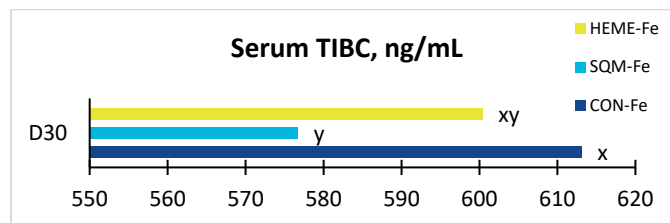
### Sows

SQM-Fe more than doubled serum ferritin vs control on d30 of gestation (**Figure 2**). Indicating that iron stores are significantly increased in SQM-Fe fed sows. Likely due to increased iron digestibility and retention.



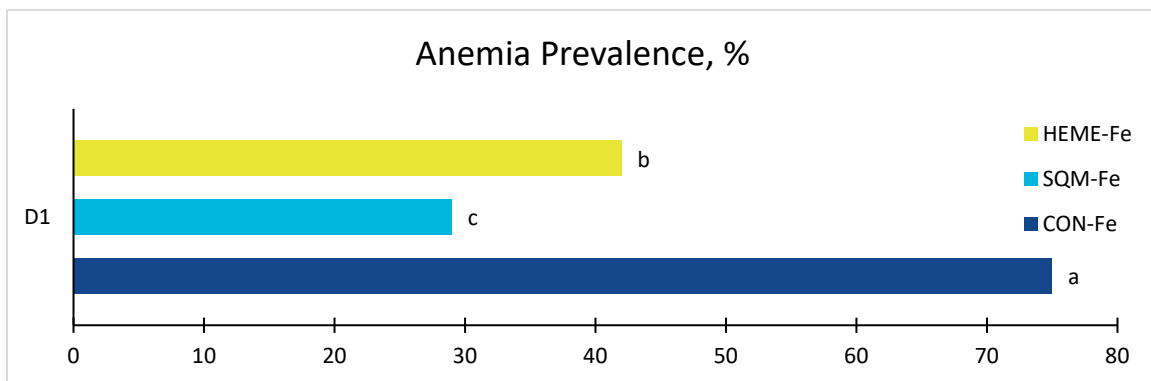
**Figure 2.** Serum ferritin concentration of sows on day 30 of gestation. Bars lacking common superscripts differ ( $P < 0.05$ ).

Iron transportation capacity tended to be reduced by SQM-Fe on d30 of gestation (**Figure 3**). This is consistent with improved iron status in all tissues, requiring less transport of iron between tissues.



**Figure 3.** Serum total iron binding capacity (TIBC) on day 30 of gestation. Bars lacking common superscripts tend to differ ( $P < 0.10$ ).

Anemia (HbC < 10 g/dL) prevalence was lowest in SQM-Fe litters (**Figure 4**). Indicates fetal iron deposition benefits from improved sow iron status during gestation.



**Figure 4.** Prevalence of piglets with HbC < 10 g/dL on day 1 post farrowing as measured with a HemoCue field testing unit<sup>4</sup>. Bars lacking common superscripts differ ( $P < 0.001$ ).

- SQM-Fe sows also weaned a higher percentage of pigs (93.4% vs 89.1%;  $P = 0.053$ ).

## Conclusions

The industry's laser focus on the iron status of nursery pigs has led us to neglect consideration of the iron status of the sow, and how the sow's iron status influences the iron status of piglets during development, at farrowing, and performance in the nursery period. Overall, the results indicate that supplementation of sow diets with SQM-Fe was able to improve iron status of the sows directly during gestation. Improved sow iron status was directly shown to improve fetal iron status and growth during gestation and is expected to improve farrowing duration. And finally, sows with improved iron status were able to improve weaning percentage during lactation.

## References

- DOI: 10.54846/jshap/1399
- DOI: 10.1093/tas/txae158
- McCormick et al.
- Morse et al.