



Feed Industry Considerations for the 12th Edition of Nutrient Requirements for Swine

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New Feed Ingredients: Ingredients from the Biofuels Industry

- The phytate levels in high DDGS are naturally reduced during the distilling process. When using phytase in a high DDGS diet, there can be errors in estimating phosphorus release compared to a diet with more corn and soybean meal.

New Feed Ingredients: Ingredients from the Soybean Industry

- Concern that protein levels in soybean meal are not as high as in the past. 46.5% min guarantee has quickly become standard.
- Concern about trypsin inhibitor levels in soybean and lack of data in trypsin inhibitor in pigs.
- Role of soybean meal level in animal health
 - Are we feeding for health, efficiency, sustainability or performance?
 - What is our target and how does that influence what we formulate?
 - In nutrient requirements for swine, what is being defined as the requirement?
- Old NRC had oil values that don't represent the oil present today with improved production processes
 - For corn and soy, we need to ensure that the values are considered and updated

New Feed Ingredients: New Protein Sources for Pigs

- Relative to insects, the industry sees the ingredient marketed as whole insect, insect protein and insect oil. Consideration should be given to more than insect meal.
- Because the NRC is used globally, is the table of ingredients comprehensive enough to cover a wider geography?
- New fractionated and fermented products are available from increasing number of soy crush and ethanol facilities.

New Feed Ingredients: Use of Crystalline Amino Acids

- Nothing in the current NRC describes the different amino acid sources
 - Propose developing a table identifying and describing the various amino acids and sources.
 - Currently, there are at least three methionine sources and two lysine sources.
- Potential for planned inclusion of higher limiting amino acids and the continued evolution of the optimal amino acid profiles
 - We'll go deeper into the ratios of amino acids, but we don't understand them yet. A first step could be to ensure the current use ratios are up to date with research.

New Feed Ingredients

- Keeping the ingredient tables is extremely important for nutrition practitioners, including in some cases legal protections. It's a key point of reference that is needed as a standard, and key for research trials.

Carbon Footprint of Diets and Feed Ingredients

- Discussion needs to cover obstacles and precautions as we make progress in ration footprint analysis. The documentation should guide NRC users on available resources to consider. This should, at the very least, be approached with a forward-looking perspective.
- Reference for consideration BASF (Opteinics®) or DSM (Sustell®)

Digestibility of Calcium and Phosphorus and Use of Microbial Phytase

- Industry supports this effort, a significant amount of literature has been added and our knowledge is significantly expanded.
- It would be beneficial to have digestible calcium numbers on ingredients, where possible.

Other Feed Additives

- The list is missing post-biotics
- Suggest being specific on plant extracts, and not just lump them. The industry has gone beyond, and a lot of segmentation exists.
- Make a short list of these additives, emphasizing their intended impacts on climate, sustainability, growth, production efficiency, and digestibility.
 - The panel should investigate how these additives can provide tangible benefits and measurable economic outcomes, not limited to just digestibility, which is vital for the industry. Information may be limited, but even mentioning this approach will help advance our understanding.

Other Feed Additives Cont.

- Many of the feed additives are not nutritional in nature, but they are important to growth, feed conversion and survival – all things we are trying to accomplish with rations.
- We should think about adding a chapter on optimizing animal performance in the NRC. The recent Dairy NRC included this focus, and we recommend the expert panel to consider it.

Use of Net Energy in Diet Formulation

- Yes, net energy needs to be reviewed. The question the industry is getting into regarding net energy formulation vs. metabolizable energy formulation when health challenges exist.
 - Where is energy system important in considering how you are going to feed a pig and formulate the diet?
- Address both metabolizable energy and net energy, you can't ignore one and focus on the other.
- Review what models are used to characterize and model net energy
 - Consider presented principles as a thought process; consider trial design for determining net energy values.
 - Listen to: [The soybean meal NE value conundrum | Feedstuffs in Focus \(simplecast.com\)](#)

Modeling Capability

- Engage industry nutritionists to understand what the actual industry modeling needs are, especially to ensure application is being developed that could be used in current industry use.

Impact of Feed Technology on Nutritional Value of Diets

- Connect with industry and key stakeholders to stay updated on the latest feed mill technologies.
 - The current 1.5-page chapter falls short of addressing the necessary information. Charles Stark at KSU is a knowledgeable resource to consider for this purpose.
- Topics that need to be addressed include:
 - Impact of feed manufacturing on nutrient utilization
 - Impact of the ingredient on feed manufacturing
 - Impact of feed manufacturing on animal performance

Interactions Between Nutrition, Immunity, and Health

- A decade ago, the industry had less data, but now they can significantly expand on nutrition, immunity, and health interactions.
- Connect with the swine veterinary expertise in the industry

Additional Industry Items of Interest

- Review acid binding capacity of ingredients in rations
- For pharmacological Zn and Cu, consider whether we continue to use "pharmacological" to reduce the stigma
 - Need to be re-evaluated whether the performance benefit is an indication of a requirement and thus we change the requirements from the relatively low levels today to what is known to optimize performance and stop using pharmacological
- All the chapters are about nutrition components, but the title of the book is nutrient requirements of swine
 - The book misses the nutrient requirements of developing gilts, gestating gilts, lactating sows, weaned piglets
 - Consider adding discussion/literature as to why the nutritional requirements for each development stage matters, impact of genetics, and crossbreeding

Additional Industry Items of Interest cont..

- Good to plan now to include a chapter on existing research gaps directing future research work
 - Could there be a digital copy through a login to access the NRC?
- Keeping the ingredient tables is extremely important for nutrition practitioners
 - It's a key point of reference that is needed as a standard, and key for research trials.
- Guidelines on ingredient sourcing and what to consider, questions to ask, etc.
 - There is a section on ingredient contaminants (biosecurity), but nothing to address ingredient quality or hygiene of the feed. KSU has good documentation that could be used.
- The Dairy NRC launch was well-executed with webinars and authors explaining the content, and we encourage them to follow a similar approach