

# Keys to inbound ingredient management

**I**NTERNALIZING nutritional management is a continuing trend within the top 40 U.S. pork producers. There has been a transition in the U.S. from 17 systems having a single nutritionist on staff and six having multiple nutritionists in 2010 to 25 systems having at least one nutritionist and 15 having multiple nutritionists in 2020.

Among the top 20 pork production systems, 17 have one nutritionist or more on staff. This shift reveals more of a focus on the individual swine operation, which is increasingly dedicating financial resources to understanding the system-wide impacts of nutritional manipulations through feed formulation.

The question that comes up most often in large production systems as nutritionists start to develop an internal nutritional program is: "What do I need to do to manage feed quality?" It does tend to be a project that is especially key for systems starting up their own internal feed formulation systems.

Swine nutritionists need to understand what is important and what is actionable information to improve feed quality systems by focusing on inbound ingredients and the tools available to allow for good reference values and validation of these ingredients.

The key areas of focus for inbound ingredients are:

1. Ingredient specifications (nutritional, physical and chemical);
2. Understanding the variety of ingredients available and their value;
3. Validating the use of ingredients with the constraints of logistics and location, and
4. Receiving programs and validation of inbound ingredients to match the needed specifications.

Setting up ingredient specifications is usually the first step for a nutritionist to take, in conjunction with the feed mill and purchasing team. This allows the purchasing team to look at multiple sources of an ingredient with a defined material reference to guide them to ensure physical acceptability for feed milling and transport as well as that the expected nutrients are provided in formulation.

The next area of focus is understanding the variety of ingredients available and how to value them. Once again, get-

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ting the purchasing group and the feed mill involved is key to ensuring that logistics is part of the discussion.

In many areas, a wide variety of co-products can be used in combination with available grains and proteins. These co-products often can provide some of the greatest savings opportunities but might also require more work to establish nutrient profiles. When it comes to gathering information on the nutrient profiles of raw materials, many options are available: supplier values, the 2012 National Research Council swine nutrition recommendations, reference websites, nutrient loading services or building your own database with near-infrared (NIR) and wet chemistry values.

It is important to realize that you will not get the same data loadings from all of the methods above due to differences in analytical methods, lab-to-lab variation within a method, frequency of sampling, equation differences for energy, how digestibility criteria are applied and other forms of variance. That said, swine nutritionists will need to either review what

their company is doing today and learn why it decided to use those values or work to pull different parts together to optimize the program.

This is probably where two questions arise: "Do we build up and maintain our own loadings?" or "Do we work with an external supplier of loadings?" A combination is possible, but keep in mind that the variation contributors listed previously can affect future formulation. If working with a supplier of loading values, discuss the strength of the loadings, frequency of sampling, wet chemistry versus NIR versus equations and how well it ties to your suppliers, and ask for updates and changes to the process each year.

Variation among analytical methods and labs often makes it difficult to compare supplier data due to lab variance and maybe lab methods being used at the different companies. The recommendation is to work within your network to try to get a good starting set of profiles from colleagues in the industry. Then, look at how well these profiles match what you are getting today in regard to crude protein, crude fat, mineral profiles, moisture and others (fiber, amino acids), depending on the ingredient.

Many references are available, including *Feedstuffs*, EvaPig, Feedtables.com, University of Illinois (Stein laboratory)



Photo: National Pork Board.

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and others that can be accessed as a starting point as well.

Once baseline specifications have been established and the formulation system is functioning correctly, nutritionists will need to build a purchasing plan for the feed ingredients — working closely with the purchasing and feed mill teams (internal or external) to understand the availability and supply of feeding options, contracted prices and how these can flow into a set of formulated diets. Understanding the storage and logistics relationship of the ingredients is also key to ensuring a proper balance of incoming materials and outgoing feeds.

Once all of the programs are in place, it is important to find a way to ensure proper monitoring of incoming ingredients to match the specification of what was intended to be purchased.

This is where an NIR system can bring the greatest value, which comes from the ability to confirm that received samples of ingredients match closely with expected nutrient values. NIR does a good job of estimating macronutrients for most ingredients, but validation of NIR equations with wet chemistry should be a continual part of the process.

An alternative approach would be to collect retained samples and send key

raw materials to a lab for analysis on a regular basis to check ingredient nutrients and validate suppliers.

### **The Bottom Line**

The bottom line is that as pork production systems grow and take more ownership of their nutrition management processes, it requires a team effort to control inbound ingredients with a systematic approach to navigate logistical challenges and consistently deliver quality feed to the feeder. ■