NUTRITION SOLUTIONS FOR GROWER-FINISHER PIGS

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INTRODUCTION

We may have little control over the market forces that shape the current calamity in the swine industry but optimized barn management will help to reduce red ink at the farm. In an effort to lower production cost many factors can be modified and feed costs, representing the single biggest expense, are one obvious area to constantly examine. However, as Denis Dipietre recently outlined, it is profit that you are trying to impact and this has two parts: revenue and cost. It is crucial to understand how your cost cutting measures impact revenue and implement only those that truly improve revenue. Cost cutting measures that decrease revenue to the point that the realized savings are offset must be avoided.

YOUR FARM IN A VIRTUAL WORLD

It is not easy to identify the most economical feeding and production strategy for a grower barn at the best of times. The recent dramatic increase in the cost of traditional feed ingredients and the current hype about by-products from the production of bio-fuels have added further to the complexity. Which alternate ingredients should I consider? Should I buy distillers and which supplier offers the product with the most value and the least variation? What nutrient specs are the most profitable with the current economics for my genotype and my barn environment? At what weight should I ship my pigs? These are just a few of the questions that producers have to find answers for in an increasingly more complex and faster changing market environment.

Agribrands Purina uses a patented business process (Burghardi et al., 2005) that leverages nutritional innovation to provide unique customer solutions. At the heart of this process is the Optipork system that simplifies finding the right solution for your operation. By building your farm in a virtual world, Optipork links a set of ingredient valuation tools to nutrient supply and sophisticated modeling defines the pig's nutrient demand. This virtual farm puts animal requirements in the context of ingredient valuation, diet formulation, performance projection and profitability (Figure 1).

Figure 1. Connecting nutrients.
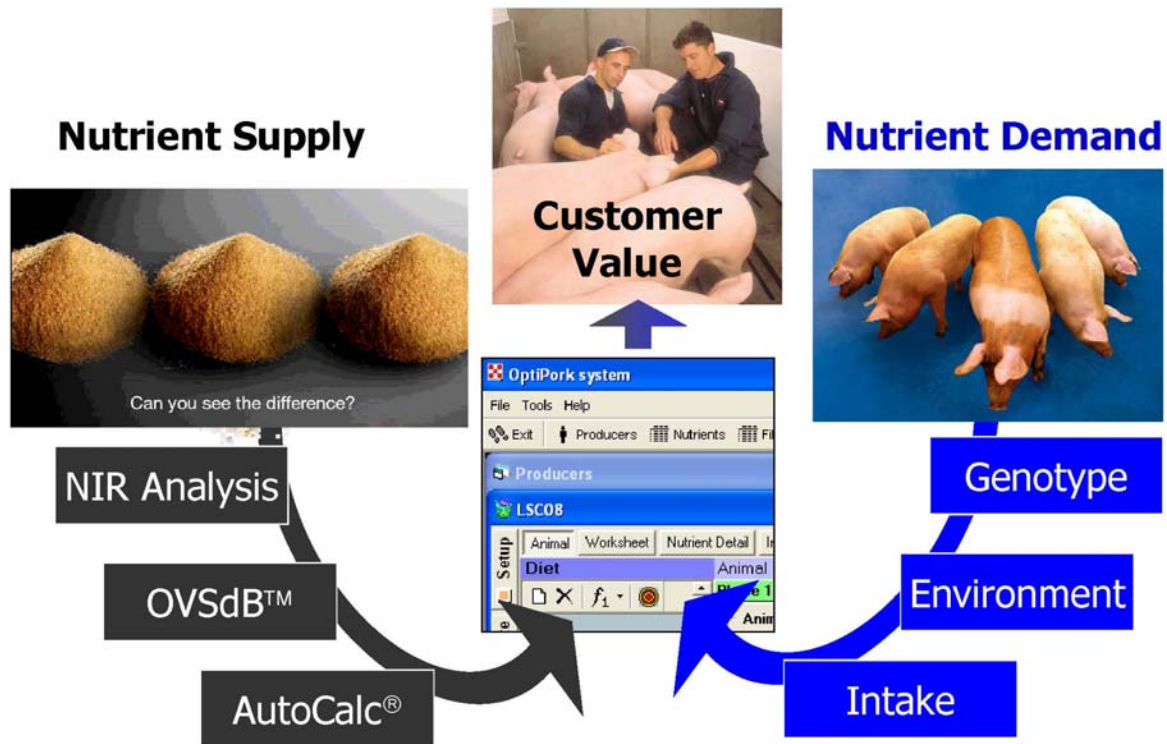
THE INGREDIENT VALUATION TOOLS

Even seemingly consistent ingredients such as corn and soybean meal are a source of nutrient variation in your business. Variation due to growing season, processing changes, fineness of grind and many other factors change nutrient levels and ultimately animal performance. By-products from bio-fuel production or other sources exhibit even greater nutrient variability. Careful understanding and disciplined measurement of incoming ingredients increase the probability of achieving the expected animal performance and business results. To help producers discover the best value ingredients Purina offers leading-edge, practical tools to assist your efforts:

- A sophisticated local laboratory equipped with NIRA technology to allow quick turn around on submitted samples.
- Optimum Value Supplier Database™ (OVS) system helps manage the analytical information we continually collect on ingredients identified by supplier and location.
- Grain Particle Scorer™ tool that provides an easy on-farm measurement of particle size, allowing adjustment of nutrient content and diet formulation.
- AutoCalc® system to calculate nutrient levels of various ingredients.

These tools coupled with our nutrient vocabulary (e.g. net energy, standardized ileal digestible amino acids, digestible phosphorus) make up the nutrient supply chain inputs for Optipork.

THE NUTRIENT SUPPLY CHAIN

Pigs require nutrients and not ingredients, making an accurate evaluation of an ingredient's nutrient profile the basis of every feeding program. The Purina Central Lab in Strathroy offers analysis for both wet chemistry and NIRA (near infrared analysis) whereby the latter provides customers with a quick and accurate means of analysis. Besides traditional nutrient analysis Purina research has also developed quick tests such as the amino acid digestibility index that provides an estimate of amino acid digestibility in ingredients. Such assays are of particular value with processed by-products like distillers where over-heating may damage and reduce available nutrients.

Analytical results from the laboratory are added to our OVS database of ingredient nutrient profiles, which represents a unique approach in collecting and summarizing ingredient values by suppliers. The database provides historical data on nutrient content that we can help you leverage into procurement and diet formulation. Because the database is anchored in lab analysis for each ingredient from each supplier's processing plant, each ingredient source is unique when setting up your formulation. You don't just have one distillers. You have as many as you have unique distillers suppliers – a reflection of the real world. For each supplier we know average nutrient values of ingredients as well as expected variation. Thus, our OVS database helps you identify the highest value supplier.

Particle size of farm ground grain is well known to affect digestibility and thus performance. But only a tool such as the Grain Particle Scorer™ allows us to make the practical link. Placing a small sample of ground grain over a predefined screen separates fine and coarse particles. This simple analysis determines the particle score for that ingredient. Based on this score, the AutoCalc® system adjusts the nutrient profile in OptiPork. The AutoCalc® system provides a simple and dynamic means to adjust over 150 nutrients from an ingredient analysis of just a few key nutrients. Our laboratory spends considerable time to ensure that the complex equations in AutoCalc® – based in wet chemistry and animal digestibility studies – correctly update the nutrient levels real-time.

DEFINING NUTRIENT DEMAND

In addition to nutrient supply the OptiPork system estimates nutrient requirements using inputs on environment and animal performance. Key inputs to define animal performance are sex, feed intake and fat-free lean growth. Under commercial conditions, feed intake is clearly influenced by multiple factors such as environmental conditions (e.g. temperature), animal status (e.g. health) and feed (e.g. feed bulkiness). However, their interactive effects make reliable predictions extremely difficult and feed intake should thus be monitored (Nyachoti et al., 2004). Observed feed intakes, combined with some measurements of environmental conditions, can then be used to make projections for future feed intake levels. To describe environment conditions OptiPork requires inputs such as effective ambient temperature, floor type or pig density. Farm-specific fat-free lean tissue growth rates are established using available carcass data. OptiPork thus facilitates the design of diet changes over time and allows managing the process to get the right feed to the right pig at the right time.

CONCLUSION

OptiPork is a patented business process that leverages our nutritional innovations to provide unique customer solutions. The system has the capacity to identify cost effective ingredients and suppliers, to accurately update nutrient profiles of ingredients and to adjust nutrient specifications to reflect current economics. With accurate prediction of animal performance and calculation of feed budgets OptiPork provides the power to discover the best feeding program for your pig in the current market environment.

LITERATURE CITED

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