

Empyreal[®] 75 Update

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Employee Update

Bill Achor has joined the Empyreal 75 team as our new Director of Sales and Marketing. Bill comes to us from Cargill's Brewing Residuals Solutions group where he focused on dried yeast products. Bill has more than ten years of sales and marketing creativity and we are excited to add his enthusiasm to our team. We look forward to his leadership contributions toward the continued success of Empyreal75.com. Please join me in welcoming Bill to the team. He can be reached at william_achor@cargill.com.

Regulatory Update

We've had a few significant happenings in the regulatory world. As you know, we've been able to sell Empyreal 75 to the pet food industry in Canada for some time, but in December we also received approval from CFIA to market Empyreal 75 for all species of livestock including aquaculture. In January, the definition for Empyreal 75 "corn protein concentrate" was moved from tentative to official by AAFCO. Also in January we received confirmation from the Peruvian regulatory authority, SENASA, on the Empyreal 75 tariff code as a feed ingredient.

From the Manager's View

By [Eric Bell](#), Product Line Manager, Protein Products

"Parts are parts" was an advertising campaign run by Wendy's restaurants some years ago to bring about customer awareness of the subcomponents in their food. It was an interesting message that describes the challenge that every formulator must address as they choose ingredients, assess nutritional properties, identify additional value, and work with their procurement team and suppliers to understand what the ingredient will be when it arrives at the plant. I am not a formulator by training, but during the last few years as we have built our business I have seen a variety of scenarios and approaches in our industry in efforts to utilize a range of available ingredients.

The basic approach to formulation has remained unchanged for many years although the tools used to formulate have certainly become much more advanced. We still combine ingredients for their basic components of carbohydrates, fats, proteins, fibers, vitamins, and minerals. There have been many advances in understanding digestibility of these components that assist us in building a better finished product. As we've advanced to use of sophisticated software and nutrient databases, our ability to formulate for a much wider range of nutrients has become significantly easier, more powerful, and cost effective for most organizations. Seeing a demonstration of today's technology makes one believe there is nothing that can't be solved through formulation. These systems permit a user to plug

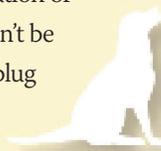
in all formulation nutrient requirements and in just a few seconds provide the best cost formulation based on inputs.



So why am I writing this article? Because we need to remember that these highly sophisticated software packages present solutions only as good as the information we put into the system. This is a major dilemma for formulators: what is the actual nutrient profile of the ingredients used in my diets, how much does each ingredient truly vary, and are there other factors that I'm not even considering? In many applications

customer expectations demand attributes and quality beyond basic nutritional requirements and economics so we have to also focus on manufacturing needs, intake/palatability and marketing constraints for the finished product.

How do we simultaneously leverage the value of ingredients that may also have characteristics such as pre and pro biotic properties, antioxidants, functionality, and other health and wellness factors? Further, in some cases our ingredient packages do not have all the characteristics we are looking for, so we need the flexibility to reach into our tool bag and pull out special ingredients that enhance palatability, specific micronutrients, meet marketing requirements and enhance functionality. These are some of the issues that keep the people in charge of formulation up at night and create stress not only internal to their own organization but with their suppliers. Formulation takes thought, understanding, strategy, and a certain amount of risk exposure.



Animal feed formulations, including pet food, are highly reliant on commodities and by-products from the human food manufacturing industry. Commodities such as grains are fairly consistent on a nutritional basis but are subject to other issues such as mycotoxin infections annually or regionally. By-products of industry are often highly variable because they are left over from a process designed to manufacture something else. The process is designed to make something other than the by-product, the by-product process typically does not have any capability to make it consistent. The by-product is often a swing product that is impacted by the primary product's yield, process control, and sales. The manufacturing process focus is on the primary product, thus the level of care and focus put into a by-product will not be equivalent to the main product.

Not being a formulation expert, I'm certain there are other strategies used to deal with these issues. I'm highlighting two common approaches. First is what I call over-formulating, the practice of looking at standard deviations of ingredients and picking targets that are more stringent than the guaranteed analysis to ensure label requirements are met. Based on discussions I've had with formulators and personal experience, many formulators will over-formulate by one-half standard deviation more or less to compensate for ingredient variation impact to the macro nutrient composition and meet label requirement. This adjustment alone is not enough to guarantee that label requirements are met. A second common practice is to use more than the minimum number of ingredients to meet the diet nutrient requirement. This practice utilizes the theory of off-setting errors to help ensure that even though we are only over-formulating by one-half standard deviation, not all the ingredients will vary in the same direction and we will be able to meet our minimum label requirements consistently.

While these strategies have proven effective for the most part in meeting our diet and label requirements, they come with a price. We should not underestimate the value of consistency of one ingredient. There is real value found by using ingredients that are consistent and provide predictable performance.

Formulation systems provide the best economic results based on

the constraints and inputs we impose. How much variation do the ingredients you use have? Could fewer ingredients be used? Could the formulation be closer to the label requirements if we were more confident in the composition of any one of our key ingredients? Could predictable functionality performance of a key ingredient help improve the manufacturing process? If the answer to any or all of these questions is yes; please contact us and see the difference Empyreal 75 can make in your diets and where it fits in your formulation toolkit. Empyreal 75 is an extremely consistent natural source of high purity corn protein. This new protein ingredient is not a by-product and is produced to specifications which provide manufacturers with a consistent, functional, renewable and cost-effective option for formulation that will make a difference you will see.

Export Update

by [Zach Longhini](#), Export Sales Manager, Protein Ingredients

Availability of container shipments from the U.S. has decreased dramatically in recent months, creating a host of problems for U.S. exporters. The faltering economy has resulted in declining import demand in the U.S.; 2009 saw the lowest level of containerized imports to major U.S. ports since 2003 and a 17 percent decline over 2008. The strain on capacity is further exacerbated by increased export activity driven by a weak dollar, which reached its lowest point in late November 2009. The effects of this shortage are widespread and have resulted in booking rejections, shipping delays, rejections of confirmed bookings, rolling cargo to subsequent ships, etc.

Compared to the market overall, Cargill experiences fewer of these adverse effects, due to our ability to leverage our size and financial well-being. However, we are not immune. In order to better address constraints on availability, we are working to improve our shipment flexibility between ports. In addition to loading containers in Seattle, Tacoma, Kansas City and Chicago we recently resumed operations in Los Angeles with a new transloader and we will begin operations in Houston shortly.

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Fostering Innovation

By Don Shandera, PhD, Feed Ingredients R&D Manager

A wise man once said that the problem with common sense was that it wasn't very common. The same is likely true of innovation, a currently over applied buzzword with an interpretation as varied as the people hearing it. Ideas are very common, but implementation and value capture are the crux of innovation. Innovation is where different personalities, values, beliefs, and approaches to business intersect, often greatly influencing the resulting outcome. Useful conversion of knowledge into ideas and the recognition of innovative ideas are not easily accomplished nor is change widely accepted.

The Internet and our modern information systems disseminate information at rates never before seen in human history. Ideas that were only once germinated within large infrastructures can now be developed within a variety of settings. New, powerful informational tools allow searching of documents and data once only reserved for those with large libraries and archives of documents. The speed and agility of modern search engines that are specifically geared for technical searches allows anyone to easily acquire information ranging from patents to scientific articles to even literary searches of books on-line, often for free. These tools level the playing field for access of knowledge and generation of ideas, thus eliminating the limitations of innovation on an organization's business processes and culture. Successful business environments foster, support and nurture ideas into successful ventures while balancing the wise use of resources. Business practices and management must be mindful to institutional underpinnings that either limit or inhibit the implementation of innovative ideas into value creation.

Innovation must be correctly integrated and implemented into a business model in order for the organization to position itself in the industry value chain over time. First, an organization must decide whether they have the internal expertise, structure and focus to foster innovation or if they should leverage external knowledge and sources. Second, the organization needs to implement a business process that assists conversion of ideas into innovation. Many businesses use a "closed innovation model" — this term describes the use of a standardized, and often rigid, evaluation process for ideas and projects in which projects can only enter the process in one way (evaluation at the beginning) and can only exit one way (by going to market). Usually several intermediate evaluation phases or gates are part of the process that allow the idea to be stopped or killed; obviously selection of decision makers is key to success as it is almost always easier to do nothing than take risk. The closed model process is a notoriously inward focused culture that limits open expression of simulated ideas, alterations during development, or idea spin-off, such as a fostering exploration/development of entry into new markets.

For instance, traditional product development will focus on development of a product or line extension for an existing market to stimulate a segment, such as a puppy food. The closed model may only focus development of a certain criteria at a target. But what if unanticipated benefits and unidentified needs for the consumer are identified during the process, such as the discovery that "a food that could serve both the customer's puppy and cats' needs in one bag." In this example, a more open model would have the flexibility to adapt ongoing discoveries that cannot be identified early in the innovation process. Would it be wise to have to reintroduce the whole

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product development project again through a closed process? Only the open model has the flexibility to unexpectedly introduce a mid-process idea into a new product category or create a new use of a product. Innovation can come at unexpected times. Obviously not all aspects of an innovative idea or invention can be predicted during conception, thus an open approach that allows changes and integration of new concepts during development will assist value creation. Other expansions of the previous “puppy food” example might include a novel safety feature, packaging, a sales/service model, transportation/delivery or other customer solutions that enhance its value. Adaptation and leveraging of circumstances cannot always be planned. Flexibility and adoptability is necessary for success and survival in a changing world.

Does your organization embrace open innovation or incremental innovation and what effect does your business culture have on the amount of risk individuals are willing to take to introduce and champion ideas? Trust is at the center of cultivating and nurturing an innovative culture. Otherwise, “seasoned” employees will only take paths that are guaranteed to succeed, which is no longer innovation, but instead is sampling, fixing, and making incremental improvements to anticipated problems. The most critical “gate” of idea conversion into innovation occurs simply within the mind of the inventor and their belief that they will be embraced, not ridiculed, for sharing it. Albert Einstein is credited as saying: “If at first the idea is not absurd, then there is no hope for it.”

Implementation of an idea will not occur without a culture of support and a business’ ability to extract value from employee engagement rather than only rewarding accomplishment of required tasks. It is also paramount to have the correct people and mindset of teams, as not everyone embraces change nor even likes alterations to the status quo. The ability of an employee or a team to take a calculated risk without worry of ridicule, reprimand, or an effect on longer term career opportunities will positively correlate to the amount of innovation that occurs within your firm. The trust and empowerment of teams to engage in risk taking does not correlate to failure, but actually results in fewer failures and poor decisions. Trust inspires ownership and ownership lessens rates of failure.

The ability of a team to empower themselves to convert ideas into innovation is fostered by the business environment they work in and also by their reporting and rewarding structure. Today’s information and rapidly changing technology environment offers teams of any size or almost any location similar opportunities to explore and invent. Risk does not equate to failure but failure is inversely correlated to ownership. A rapid paced, flexible environment driven by ownership and inspired by trust is necessary for ideas to be converted into value creation; otherwise, de-risking will evolve into stagnation. Remember, mediocrity is contagious and if your business isn’t growing through leveraging innovation, it very well may be dying.

Market Commentary

By [Lee Bohling](#), Sales Manager, Pet Food Ingredients

The market is finally seeing some price corrections in corn and beans as the RSI had been indicating since Dec. 1 that commodities were overpriced. Keep in mind that the Index Funds have been leading this rally as they wanted to buy commodities as an inflation hedge. We were also seeing support as corn was following oil prices. We have been saying that corn was in a \$3.80 - \$4.25 trading range in the lead month since Dec. 1, so now we will have to readjust our trading range, as March closed at \$3.72 today. Would expect support at \$3.50. The bean trading range is \$9.00 - \$10.25 with downside potential to \$9.00 if weather remains ideal in South America. The USDA Report increased the corn yield to 165.2 bu/a which improved the carryout from 1.675 bil bu to 1.764 bil bu, which put the Carryout To Use Ratio at 13.5%. The bean carryout dropped 10 mil bu to 245 mil. The trade is now focused on ideal weather conditions in South America, which they expect will translate into production numbers of 53 MMT in Argentina and 65MMT

in Brazil. We still expect to see an acreage battle for corn acres here in the U.S. come spring. Question is from what point will we stage a rally if this occurs.

Ratios are still high for CGM which is a reflection on tighter supply than normal, even though demand has backed off. Price rationing has kicked in at these levels so I would expect the market to be more responsive to any down side pressure as supply improves.

On the economic front, talk of banks not borrowing and businesses not wanting to borrow has flooded the media, as small businesses are not saying “if we had more employees we could sell more product.” Although some say the economy is growing, the NFIB, Beige Book and the Jolt Serve all show weak hiring, and this is not going away any time soon. JPMorgan’s quarterly profits of \$3.3 billion were overshadowed by poor loan and credit card charge downs. However, the investment part of the bank made \$1.9 billion of the quarterly profits, and that is saying something.