



2014 North American Poultry Feed
New Product Innovation Award



F R O S T & S U L L I V A N



50 Years of Growth, Innovation & Leadership

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Background and Company Performance

Industry Challenges

The animal feed industry faces the challenge of feeding a global population of about 9 billion people by 2050, which means that more people have to be fed with limited resources. In addition to this, consumers are demanding more animal protein, particularly in developing countries, as they continue to adopt westernized lifestyles. As such, there is the growing need to increase the efficiency with which animals convert feed into increased output, particularly protein.

Poultry dominates the overall livestock population and is expected to drive the total growth in animal numbers. This is mainly due to consumers demanding more poultry meat as a result of the health and wellness trend. Furthermore, poultry production is seen to be a cheaper and simpler process compared to other livestock categories. Thus, the poultry sector is expected to drive the demand for animal feed ingredients, as farmers respond to demand levels.

Livestock farmers have experienced increased feed costs due to feed ingredient price volatility. Consequently, feed costs make up about 60–70% of livestock production. As a result, there is a continued need to optimize feed ingredient use while also considering the overall performance of the animal.

In terms of legislation, there is increasing pressure on US livestock farmers to reduce the use of antibiotics as growth promoters in animals, which is already banned in the European Union. This has led to the increasing need to find alternative solutions. Consumers are also becoming more aware of the ingredients that go into the animals that produce the meat they are consuming and do not want antibiotics in their meat. Lastly, all these challenges have to be met in a sustainable manner.

New Product Attributes and the Customer Impact of DuPont

Match to Needs

Enzymes are produced to enhance digestion and to aid nutrient absorption while ensuring farmers' profitability, improving animal performance & growth uniformity, and reducing environmental pollution. Probiotics improve the microbial balance in the animal's gut. With the growth in the animal feed ingredients market expected to be driven by the poultry sector, DuPont has combined its enzymes and probiotics proficiency to create Syncra® AVI for the poultry sector. This is an advanced enzyme plus probiotic solution that radically improves bird performance and supports gut health; thus, it is a great benefit for the poultry industry.

Poultry producers face volatile feed ingredient prices that are driven by the supply and demand pattern in the macro feed ingredient market on the back of various factors such

as detrimental weather in major producing countries, political uncertainties, and economic situations. This optimized solution has also been seen to reduce overall production cost.

Best Practices Example: More than 25 years ago, DuPont was able to successfully launch a unique combination of its carbohydrase and protease products, which helped the company attain its leadership position in the feed enzymes industry. This unique multi-enzyme combination allowed the use of cheaper feed ingredients without a negative effect on the birds' performance. As a result, DuPont already has a long-standing reputation for its innovative abilities. The more recent successful launch of Syncra® AVI is evidence of DuPont responding to the increasing need of the poultry industry to reduce production costs without compromising the performance of birds or their gut health. Furthermore, there is continued pressure for the industry to reduce feed conversion ratios as the increasing human population drives the demand for animal protein. Although feed manufacturers/nutritionists have been known to individually combine prebiotics and enzymes in their formulation, Syncra® AVI is backed up by multiple trials carried out at independent research organizations. Also, this product is a cost-effective and time-efficient option.

Reliability

The reliability of DuPont's products is proven by the company maintaining its leadership position in the feed enzymes market. The launch of Syncra® AVI is backed up by research studies and has an additional benefit that combines the different but potentially complementary modes of action of exogenous feed enzymes and probiotics.

Best Practices Example: While it is possible for nutritionists to combine enzymes and probiotics, the fact that DuPont's product is based on research trials proves its safety and efficacy in improving animal performance. The product is also sold in optimized dosages and has been shown to unlock full poultry feed potential. Research studies, which support the product's reliability, examined the potential benefits of combining enzymes and probiotics. According to DuPont, the combination implied beneficial effects on the apparent metabolizable energy (AMEn) through improved protein, fat, and starch digestibility. It also suggested reduced ileal insoluble non-starch polysaccharide (NSP) flow, thus indicating enhanced fiber digestion. Furthermore, incremental recovery of body weight gain and improvement of feed conversion ratio was observed in experiments when using this combination. This was suggested by DuPont to be a result of different modes of action, resulting in complementary and potentially additive effects in the birds.

Quality

In addition to the reliability of DuPont's products, which ensures the company exceeds customer expectations, the functionality of the product is evidence-based. A cost comparison with an antibiotic growth promoter (based on the live weight price and feed

costs at the time) showed that there was a 2.5% increase in gross profit. The unmatched quality of the product appears to unlock the potential nutritive value of feed.

Best Practices Example: At an inclusion rate of 200g/ton for broilers, the product delivers a guaranteed level of 10,000U/g xylanase; 1,000U/g amylase; 20,000 U/g protease; and Bacillus 3.75×10^8 cfu/g. This combination suggests optimized dosage. Also, the convenience of application means that logistics costs are reduced and the product takes up less micro-bin space.

Positioning

DuPont is the only company that offers a trial-backed product that combines prebiotics and enzymes for the poultry industry. Given that the poultry industry is expected to drive the feed ingredient market's growth, this innovation represents a significant investment for the industry. According to DuPont, the xylanase in the product breaks down NSP, resulting in reduced digesta viscosity, release of trapped nutrients, and improved feed passage rates. The amylase increases the hydrolysis and digestibility of starch, consequently enhancing the release of energy, while protease improves protein digestibility. Probiotics, on the other hand maintain the gut microbiota. As such, the combination of this multi enzyme and probiotics product is unique to DuPont.

Best Practices Example: DuPont is currently the only company offering this product that reduces production costs for poultry producers, thus translating into reduced cost for the industry, which faces feed ingredients price volatility. The solution also significantly improves digestibility and gut health and reduces logistics cost thanks to the convenience of its use within all production environments.

Price/Performance Value

While there is no direct competition for this innovation, as it is currently the only product of its kind, DuPont has an established reputation of manufacturing products that deliver value to their respective markets. Furthermore, customers are assured of quality as the company's products are based on trials. Even if its products are not the least expensive, the benefits of DuPont's product offerings outweigh the costs, while bearing in mind that "cheapest" does not necessarily translate to "best performing."

Best Practices Example: DuPont invests in trials that serve as evidence for the value of its products. It saves smaller customers (in revenue terms) a lot of time by delivering an optimized dosage of the ingredients, which saves them money over having to mix the products themselves.

Customer Purchase Experience

DuPont has a good brand image, which is evidenced by its ability to maintain top positions in the markets in which it operates. Apart from this, customers see the products to be trustworthy, as they are evidence-based, which is a very important factor for nutritionists.

Best Practices Example: DuPont works closely with nutritionists during the decision-making process, which means that products meet the direct needs of the customers/market. As a result, customers are of the opinion that they are purchasing the optimal solution.

Conclusion

DuPont has a proven track record of innovating products that have benefited the animal feed industry as a whole, particularly in terms of reducing cost, maximizing profits, and improving efficiency in a sustainable manner. DuPont consistently takes advantage of gaps in the market; as a result, most of its solutions are industry “firsts,” which means the company occupies a top position in most of the markets in which it operates. For example, it has maintained its leadership position in the feed enzymes market, after successfully launching a multi-enzymes product more than 25 years ago. While most competitors specialize in the production of 1 of the 2 ingredients (enzymes and probiotics), DuPont has introduced a product that combines the benefits of both ingredients, thus, saving time, storage space, and money.

With its strong overall performance, DuPont has earned Frost & Sullivan’s 2014 New Product Innovation Award.

Significance of New Product Innovation

Ultimately, growth in any organization depends upon continually introducing new products to the market, and successfully commercializing those products. For these dual goals to occur, a company must be best-in-class in three key areas: understanding demand, nurturing the brand, differentiating from the competition. This three-fold approach to delivering New Product Innovation is explored further below.



Understanding New Product Innovation

Innovation is about finding a productive outlet for creativity—for translating ideas into high quality products that are of a consistently high quality and have a deep impact on the customer.

Key Benchmarking Criteria

For the New Product Innovation Award, we evaluated two key factors—New Product Attributes and Customer Impact—according to the criteria identified below.

New Product Attributes

- Criterion 1: Match to Needs
- Criterion 2: Reliability
- Criterion 3: Quality
- Criterion 4: Positioning
- Criterion 5: Design

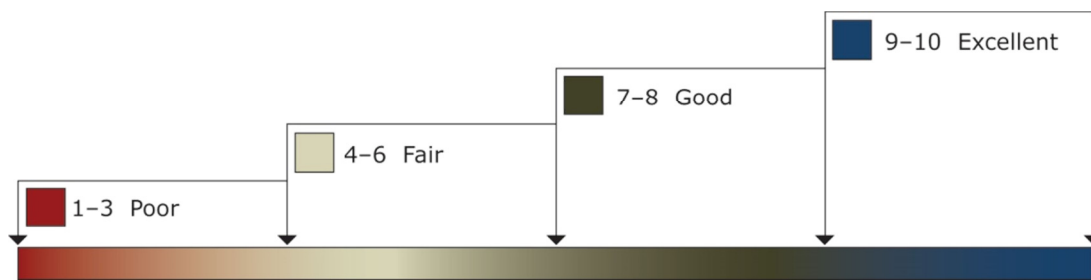
Customer Impact

- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

Best Practice Award Analysis for DuPont Decision Support Scorecard

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This tool allows our research and consulting teams to objectively analyze performance, according to the key benchmarking criteria listed in the previous section, and to assign ratings on that basis. The tool follows a 10-point scale that allows for nuances in performance evaluation; ratings guidelines are illustrated below.

RATINGS GUIDELINES



The Decision Support Scorecard is organized by New Product Attributes and Customer Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criteria are provided beneath the scorecard). The research team confirms the veracity of this weighted scorecard through sensitivity analysis, which confirms that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies.

The results of this analysis are shown below. To remain unbiased and to protect the interests of all organizations reviewed, we have chosen to refer to the other key players in as Competitor 2 and Competitor 3.

DECISION SUPPORT SCORECARD FOR NEW PRODUCT INNOVATION AWARD

<i>Measurement of 1-10 (1 = poor; 10 = excellent)</i>			
New Product Innovation	New Product Attributes	Customer Impact	Average Rating
DuPont	9.5	9	9.25
Competitor2	9	8.5	8.75
Competitor3	7	7	7

New Product Attributes

Criterion 1: Match to Needs

Requirement: Customer needs directly influence and inspire the product’s design and positioning

Criterion 2: Reliability

Requirement: The product consistently meets or exceeds customer expectations for consistent performance during its entire life cycle

Criterion 3: Quality

Requirement: Product offers best-in-class quality, with a full complement of features and functionality

Criterion 4: Positioning

Requirement: The product serves a unique, unmet need that competitors cannot easily replicate

Criterion 5: Design

Requirement: The product features an innovative design, enhancing both visual appeal and ease of use

Customer Impact

Criterion 1: Price/Performance Value

Requirement: Products or services offer the best value for the price, compared to similar offerings in the market

Criterion 2: Customer Purchase Experience

Requirement: Customers feel like they are buying the most optimal solution that addresses both their unique needs and their unique constraints

Criterion 3: Customer Ownership Experience

Requirement: Customers are proud to own the company’s product or service, and have a positive experience throughout the life of the product or service

Criterion 4: Customer Service Experience

Requirement: Customer service is accessible, fast, stress-free, and of high quality

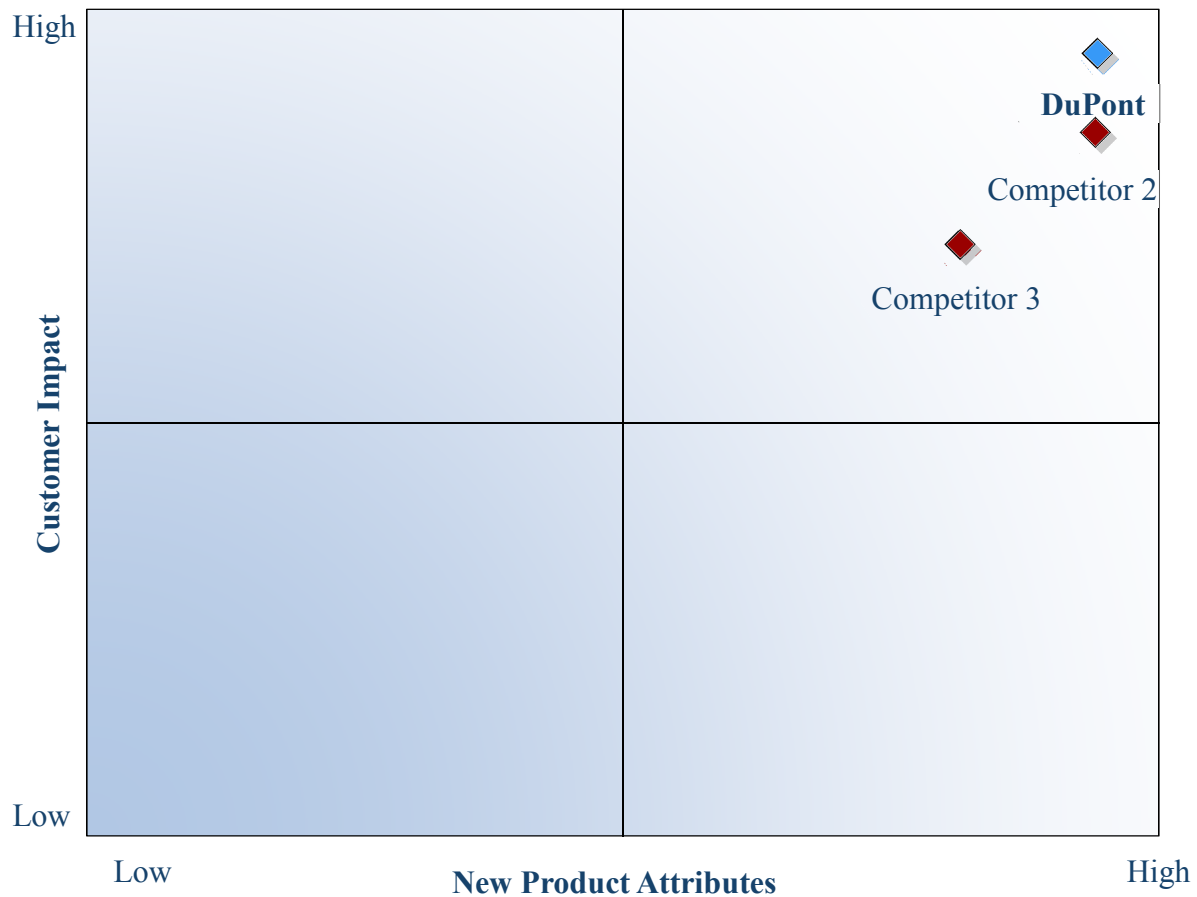
Criterion 5: Brand Equity

Requirement: Customers have a positive view of the brand and exhibit high brand loyalty

Decision Support Matrix

Once all companies have been evaluated according to the Decision Support Scorecard, analysts can then position the candidates on the matrix shown below, enabling them to visualize which companies are truly breakthrough and which ones are not yet operating at best-in-class levels.

DECISION SUPPORT MATRIX FOR NEW PRODUCT INNOVATION AWARD(ILLUSTRATIVE)



The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree-view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often, companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry players and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS



Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Our awards team follows a 10-step process (illustrated below) to evaluate award candidates and assess their fit with our best practice criteria. The reputation and integrity of our awards process are based on close adherence to this process.

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1 Monitor, target, and screen	Identify award recipient candidates from around the globe	Conduct in-depth industry research Identify emerging sectors Scan multiple geographies	Pipeline of candidates who potentially meet all best-practice criteria
2 Perform 360-degree research	Perform comprehensive, 360-degree research on all candidates in the pipeline	Interview thought leaders and industry practitioners Assess candidates' fit with best-practice criteria Rank all candidates	Matrix positioning all candidates' performance relative to one another
3 Invite thought leadership in best practices	Perform in-depth examination of all candidates	Confirm best-practice criteria Examine eligibility of all candidates Identify any information gaps	Detailed profiles of all ranked candidates
4 Initiate research director review	Conduct an unbiased evaluation of all candidate profiles	Brainstorm ranking options Invite multiple perspectives on candidates' performance Update candidate profiles	Final prioritization of all eligible candidates and companion best-practice positioning paper
5 Assemble panel of industry experts	Present findings to an expert panel of industry thought leaders	Share findings Strengthen cases for candidate eligibility Prioritize candidates	Refined list of prioritized award candidates
6 Conduct global industry review	Build consensus on award candidates' eligibility	Hold global team meeting to review all candidates Pressure-test fit with criteria Confirm inclusion of all eligible candidates	Final list of eligible award candidates, representing success stories worldwide
7 Perform quality check	Develop official award consideration materials	Perform final performance benchmarking activities Write nominations Perform quality review	High-quality, accurate, and creative presentation of nominees' successes
8 Reconnect with panel of industry experts	Finalize the selection of the best-practice award recipient	Review analysis with panel Build consensus Select winner	Decision on which company performs best against all best-practice criteria
9 Communicate recognition	Inform award recipient of award recognition	Present award to the CEO Inspire the organization for continued success Celebrate the recipient's performance	Announcement of award and plan for how recipient can use the award to enhance the brand
10 Take strategic action	Share award news with stakeholders and customers	Coordinate media outreach Design a marketing plan Assess award's role in future strategic planning	Widespread awareness of recipient's award status among investors, media personnel, and employees

About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best in class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages almost 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from 31 offices on six continents. To join our Growth Partnership, please visit <http://www.frost.com>.