

# AQUAFEED WORKSHOP

September 27, 2018, Jalisco, Mexico

## PRESENTATION SUMMARIES

### 09:00 hrs. Session 1: Feed Technology

#### **Extrusion Applications - Optimal Design and Quality Management of Aquafeed**

*Robert Strathman, President, Famsun-USA Design and Engineering*

There are numerous technical design features built into every aquafeed product.

These features, such as buoyancy and water stability, must vary by the targeted aquatic species. Thus, understanding how these features are defined and incorporated into each product are critical first steps to both product development and quality management.

Finding and eliminating sources of quality problems in production, depends on a keen understanding of how these design features are affected by formulation, ingredient selection, and the production process. By identifying these interactions, the appropriate measuring and monitoring standards can be developed. This presentation will focus on four essential aquafeed design features: Buoyancy, Water Stability, Shelf Life, and Prevention of Water Pollution. In doing so, we hope to better enable you to develop and continually deliver exceptional products.

#### **What you should know about producing both floating and sinking feeds**

*Dana Nelson, Market Development - Aquaculture specialist, Extru-Tech, Inc.*

Although the primary purposes of using cooking extrusion equipment to produce all aquatic feeds is similar or even the same, the challenges

and problems can be quite different depending on the final density. Successfully producing premium floating and sinking feeds requires an understanding of these differences. Unfortunately, controlling the final bulk density of feed is not always as simple as it seems. The aim of this talk is to introduce some of the lessons learned from the challenges of past and discuss equipment solutions directed at solving these problems.

#### **Advanced Process Technologies for Micro Feed Production**

*Spencer Lawson, Process Technologist, Wenger Manufacturing Inc.*

In an industry that is consistently changing, it is important to note that the way aquais produced is changing and advancing as well. While specifically focusing on micro aquatic feed, twin screw extruder technology exists that will allow for production of direct extruded feed as small as 0.5 mm. With proper preconditioning and extruder die technology, production rates that were at one time very difficult to achieve, are now possible, allowing for greater flexibility in the products produced as well as the actual amount of throughput that can be achieved. In addition to extrusion and preconditioning, it is important to note that ancillary equipment exists to satisfy a number of challenges that could impact the way a facility produces feeds. Not to be overlooked, drying also contributes to a major part of aquatic feed production. Therefore, by making drying improvements an effort to improve efficiencies is reflected.

## 16:00 hrs.    **Session 2: Feed & Ingredients**

### **Biosecure Shrimp Feeds and On-Farm Feeding Strategies**

*Albert GJ Tacon, PhD., Aquaculture Nutrition & Feed Expert, Aquatic Farms Ltd.*

Biosecure shrimp feeds and feeding strategies means feed, whether live, fresh or formulated, and the management of the feed on the farm, should not be an entry point of potential pathogens to the shrimp and/or to the culture system. This presentation reviews the different feeds commonly used to produce farmed shrimp and discusses their potential risks from a disease perspective, including the use of live hatchery and nursery feeds and the use of live and/or fresh food organisms for broodstock, and dry formulated shrimp feeds for shrimp grow-out operations. The critical role played by feed processing techniques for the pasteurization and destruction of pathogens within shrimp feeds, and the need to for nutritionists to formulate feeds for optimum nutrition and health, and not just for optimum growth will also be discussed. Good on-farm feed management practices will also be discussed.

### **The Use of Specifically Selected Probiotics in Shrimp Mariculture**

*Bart R. Dunsford, Ph.D., PAS., Business Development Manager, Lallemand Animal Nutrition*

The shrimp industry is constantly undergoing challenges; these come from various directions. These can be social pressures, i.e. reducing antibiotic use, but for the producer the constant pressure of diseases will always be an issue that need to be addressed. Pre- and probiotics have often been a potential solution to meet a number of these disease challenges. However, the frequent use of random products can lead to variable and inconsistent results. Understanding the products is key to ensuring that the desired results are achieved; including live (non-spore forming) bacteria in processed feed, can lead to poor results as these bacteria often cannot survive the

processing step. Key to the use in probiotics depends on the use of those products that have been selected for their safety (i.e. no antibiotic resistant genes), and that have been demonstrated to have the desired results (i.e. those that can inhibit the growth of known pathogens). Prebiotics can be more robust in their use as they are able to withstand normal feed processing practices, but they tend to be less specific in their mode of action. We will focus on the use of both probiotics and prebiotics and results obtained in shrimp mariculture.

### **Functional Feeds, Strategy for Reduction of Risks and Diseases in Aquaculture Under Challenging Times**

*Gilberto Hernandez-Gonzales, Aquaculture Manager N&CA, Nutriad*

Although aquaculture has been the world's fastest-growing food sector, reaching an average growth rate of around 9% for the last 30 years, in the last decade, growth has been compromised by serious environmental challenges and the rise of complex diseases caused by viruses, parasites and bacteria. Due to culture conditions, where interactions between, water, soil, fish/shrimp, microorganisms, etc. are so dynamic, the balance of the culture system is difficult and challenging. Recent problems and acute diseases, such as white feces syndrome in shrimp, are no longer caused by a single agent. One of the most important feeding strategies to tackle these complex problems is feed management. Feed is the most practical, and sometimes the only way (as in shrimp), to support and improve the health status in the animals. Nowadays feed must not only cover nutritional requirements for better animal performance, it must go beyond and bring functional properties to the feed to improve metabolic or physiological process, microflora modulation, etc. These functional feeds are positioned as part of a preventive strategy to reduce risk and impact of disease in aquaculture.

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## ABOUT THE PRESENTERS



**Bart R. Dunsford**

Dr. Dunsford has been involved in the aquaculture business providing functional ingredients for more than 15 years. During this time he has primarily focused on the use of prebiotics and probiotics in aquaculture applications. Currently Dr.

Dunsford is working with Lallemand Animal Nutrition providing probiotic solutions in shrimp larviculture and production settings.



**Dana Nelson**

As a past owner Nelson & Son's, Inc. (SilverCup USA), Dana has over 25 years' experience producing aquaculture feeds of all types. His primary strength is his exposure to commercial production issues. After a brief retirement, he has now returned to work with

Extru-Tech. The goal is to add his experience to Extru-Tech's well-known capabilities to provide the most refined and robust solutions available specifically for aquafeed production.



**Gilberto Hernandez-Gonzales**

Gilberto Hernandez-Gonzales graduated in marine biology from Universidad Autónoma de Baja California Sur and a Masters degree in Aquaculture from DICTUS of Universidad of Sonora, specializing in shrimp nutrition. He has more

than 15 years' research and practical experience in the aquaculture industry. Since 2011 Gilberto has been a member of Nutriad's aquaculture team, responsible for the North and Central America region.



**Robert Strathman**

Rob Strathman is President, Famsun-USA Design and Engineering. A graduate of Kansas State University, he gained his BS in Feed Science and Management in 1994. He previously worked for Hill's Pet Nutrition as Process Development & Innovation

Manager for nine years and Wenger Manufacturing as Technical Services Director for 12 years.



**Spencer Lawson**

Spencer Lawson received a Bachelor of Science degree in 2006 from Kansas State University. After working in the feed and pelleting industry for two years, he has been employed with Wenger. For the past four years he has been

exclusively involved with the process technology for extrusion systems. Spencer actively speaks at university short courses and industry seminars as well as traveling globally dealing with various extrusion systems.



**Albert GJ Tacon**

Dr. Tacon joined FAO as an aquafeed and nutrition expert in 1984. In 1999 he moved to Hawaii to become Director of the Aquatic Feeds and Nutrition Program at the Oceanic Institute and now works as Technical Director, Aquatic Farms Ltd., Hawai'i,

as an independent consultant in aquaculture and aquaculture nutrition and feed. He has a Ph.D. in fish nutrition from University College (University of Wales). He was elected to the board of the World Aquaculture Society in 2018.