



Feed technology can profoundly contribute to better aquatic feeds

By Dejan Miladinovic and Olav Fjeld Kraugerud Ph.D.

Centre for Feed Technology (FôrTek) – Norwegian University of Life Sciences (NMBU)

Strategies to ensure deliverability

The increased demand for high quality food implicitly leads to the fact that an ever more important resource for protein-supply to humans in the future will be intensive farming of aquatic species. Moreover, intensive aquaculture will require compound feed. FAO predicted that the human population will grow rapidly, reaching 9.1 billion people by the year 2050. At present, the modern feed diet for aquatic species includes 50% less

fishmeal when compared to 20 years ago.

Aquaculture and the related feed industry must document their impact on the environment by using sustainable ingredient resources. Consumer awareness as well as food safety and security requires such action regarding ingredients. One main argument against sustainability of fish farming is its dependence on fishmeal. The fish feed industry and intensive aquaculture need more than ever ideal novel ingredients for the future. In

order to call biomass a feed ingredient it would require thorough upgrading regarding nutritional quality, and undoubtedly, approval as a feed ingredient.

First, such ingredients must be safe for fish and humans. Secondly, it must be without any anti-nutritional factors, and third it would need to have taste and flavor that is accepted by the fish. Overall, there is a need of a reliable supply of these new raw materials.

A decade ago, our present University,

with its Aquaculture Protein Centre, was putting a lot of effort into the search for alternatives to fishmeal. The scientific work resulted in a considerable amount of know-how related to ingredients and

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processing, primarily ingredients of plant origin. For instance, the idea of pre-treating individual ingredients in a way that optimized their nutritional value, instead of processing all ingredients the same, was developed successfully at that time. Much of that processing was performed at the Centre for Feed Technology.

A new research Centre, Foods of Norway, at the Norwegian University of Life Sciences (NMBU) is a good example of how science and technology can contribute to developing better and more sustainable protein resources. Question asked prior to establishing such a Centre for Research-based Innovation as Foods of Norway, was based primarily on; “How to develop novel feed ingredients with an unconventional approach, technology and raw materials?”

Foods of Norway will have period of eight years and a total budget of 192 million Norwegian kroner (US \$24 million). Goal for Foods of Norway are to develop high-quality feed ingredients from natural bio-resources that are not suitable for direct human consumption, such as forest biomass and seaweed. The aim of Foods of Norway is to improve also the efficiency of feed ingredients

and hence the feeds, by novel feed-processing technology, advanced genomic analysis and identification of different selection criteria for aquatic farmed animals. Foods of Norway, with support from Centre for Feed Technology (FôrTek), will aim to improve the nutritional value of novel feed ingredients by using a new approach towards feed processing and technology.

At the Centre for Feed Technology, we believe that the approach of tailored treatment of the most important ingredients at the feed plant will be an area of increased importance: this independently if the ingredients are in the form of liquid or the more traditional dry meal. This specialized treatment combined with the coming pool of new ingredients will be a major step when it comes to reducing the ecological footprint from the feed industry, and ensure future deliverability.

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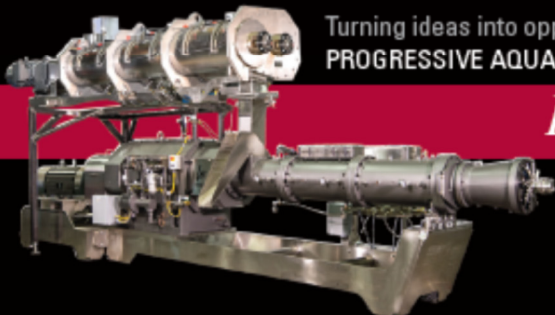
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About the Centre for Feed Technology

The Centre for Feed Technology is a department at the Norwegian University of Life Sciences. The Centre's strength is bridging principle to practice. From the client's seminal concept to the Centre's deliverable product, experienced professionals analyze each step. State-of-the-art equipment supplements our know-how in feed technology. The Centre serves the international feed industry by carrying out research in all areas of fish feed, pet food and animal feed. The production lines are based on twin screw extrusion and pelleting (ring die and flat die) process, utilized by the present-day feed industry. This enables variation of process conditions and ingredients in the production of all kinds of fish and animal feed as well as the pet food. To ensure our competitiveness one of our employees is now part of PhD project which takes into consideration utilization of various enzymes and their combination for influencing better rheological and tribological characteristics of novel protein-based feed ingredients. One aim in this project is lowering the electrical consumption during the extrusion process.

Another important mission given to the Centre is training graduate students in the MSc in Feed Manufacturing Technology at the Department for Animal and Aquacultural Sciences. Graduates provide feed companies with qualified personnel, well-balanced in theory and practice. Teaching and training is partly based on lectures, but a considerable part is offered as demonstrations and training in groups, such that the candidates are getting a lot of hands-on knowledge.



Above: Students from the course Advanced Feed Manufacturing set the screw configuration for the extrusion process.

Below: The students post processing, with mash and finished feed.



More information



Download Dr. Olav Kraugerud's presentation about the work of the Centre for Feed Technology at NMBU made June 9, 2015 at the Aquafeed.com conference, Aquafeed Horizons 2015 in Cologne, Germany. (PDF), Or contact Dr. Olav Fjeld Kraugerud.
E: olav.kraugerud@nmbu.no