

The Development of Shrimp Feeds for Organic Aquaculture

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A series of studies have been carried out with the goal of developing strategies for the production of high quality aquaculture feeds that replace marine fishmeal and fish oil ingredients with Organically certified proteins and lipids. We have demonstrated that the ingredients of prototype diets currently being tested can be substituted with ingredients that qualify these diets for certification under the USDA National Organic Program and/or IFOAM. Diets with fully organic ingredients have been produced and tested in both laboratory and field experiments to confirm the ability of the diets to perform economically in a standard production environment. Commercial Organic diets, based on the strategies examined, could contain by marine-sourced ingredients and may be applicable to a wide variety of feeds for both herbivorous and carnivorous species.

The premise of these studies is that the fishmeal component of a shrimp diet could be replaced by a soy meal/poultry by-product meal combination and the fish oil component could be replaced by a proprietary, fermentation-produced DHA (docosahexaenoic acid) and ARA (arachidonic acid) algal meal products. Preliminary data with practical defined diets showed that the fishmeal component can be replaced by soy and poultry by-product and the fish oil can be replaced by as little as 0.6% of the proprietary DHA/ARA product. Commercial feed, formulated to approximate these diets, was subsequently found to perform economically in a standard production environment. Although these initial data are only preliminary, it appears as though the fishmeal component can be replaced by the soy and poultry by-product and the fish oil can be replaced by the algal meal products. However, this strategy still uses a significant amount of animal protein (poultry by-product meal), so this does not constitute a fully vegetarian product. In a second trial, fully vegetarian diets, based on the results described above, were tested to compare performance with commercial control diets. Strategies from both animal protein and all-vegetarian feed trials will be presented. Such strategies have broad applications for the culture of other freshwater and marine crustaceans and finfish.