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Utilization of seafood processing wastes in aquaculture through integrated nutritional and feed manufacturing technologies

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Abstract

An interdisciplinary project is proposed to increase the efficiency and efficacy of Texas-based aquaculture through development of nutritious, cost-effective alternatives to traditional marine protein feedstuffs. This will entail development of protein concentrates and complete diets from seafood processing wastes and biofuel co-products such as soybean meal and distillers dried grains with solubles by applying dry extrusion technology. The most promising products and/or diets will be evaluated for nutrient digestibility and production potential based on assessment of growth performance and metabolic capacity (marginal metabolic scope) via trials conducted under controlled laboratory conditions with red drum at the Texas A&M University Aquacultural Research and Teaching Facility and with penaeid shrimp at the Shrimp Mariculture Project in Port Aransas using well-established, standardized protocols. The developed technologies (manufacturing techniques and feedstuff products) will be subjected to economic analysis and extended to various user groups including seafood processors, feed manufacturers and aquaculturists through established networks. Thus, the developed products from this project will make more efficient use of seafood processing wastes and other co-products from biofuels production to replace fish meal and other costly components of aquaculture diets, increasing the cost-effectiveness of aquacultural production while limiting the expense and logistical constraints associated with disposal of seafood processing wastes.