

Aqua

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7. Title Nutritional Research with Emerging and Established Species in Louisiana Aquaculture			
12. Investigator Name(s) (Last Name and Initials) Reigh, R. C.			
20. Termination Date 09/30/2014		40. Period Covered (mo/da/year): 01/01/2011 TO 12/31/2011	
Outputs: Results of nutrition research with Florida pompano and American alligator were used to identify cost-effective improvements in diet formulations which will facilitate sustainable production of these species and also identify additional research needed to promote profitable production of pompano and alligator as aquaculture products. Information on the use of plant proteins to improve compounded diets for Florida pompano was disseminated to scientists and pompano producers in three published abstracts and three oral presentations delivered at annual meetings of the Louisiana Chapter of the American Fisheries Society and the United States Aquaculture Society (Aquaculture America 2011). Updates on the results of nutrition research with American alligator were shared with alligator producers at several monthly meetings of the Louisiana Alligator Farmers and Ranchers Association and the Louisiana Alligator Advisory Council (AAC). With approval of the AAC, a new research project was funded by the Louisiana Department of Wildlife and Fisheries to investigate the effects of dietary protein and energy on alligator growth and skin quality, as well as effects of dietary nitrogen content on water quality and air quality in the production environment.			
Outcomes/Impacts: Costs of compounded diets containing fish meal as a primary protein source can be expected to rise as fish meal prices increase in response to static supply and growing demand. Alternatives to fish meal are needed to reduce production costs in many aquacultural enterprises. Some plant proteins are potential replacements for fish meal because of their amino acid composition, lower cost and wide availability. Research with soybean products as alternatives to fish meal indicated that all-plant diets containing combinations of soybean meal (SBM) and soybean protein concentrate (SPC) can produce weight gains of Florida pompano comparable to weight gain achieved with a diet containing 10% menhaden fish meal. Pompano fed diets with 25-30% SBM in combination with 43-39% SPC had weight gain equivalent to pompano fed a control diet with fish meal, while weight gain of fish fed other soy combinations was significantly less than that of the control group. In digestibility trials with pompano, apparent crude protein digestibility of corn gluten meal (CGM; 57%) was significantly higher than that of distillers dried grains with solubles (DDGS; 21%) but not significantly different from canola meal (CM; 39%). Apparent energy digestibility of DDGS (31%) was significantly lower than CGM (57%) but significantly higher than CM (21%). Findings suggested that composition of the reference diet used in a digestibility trial affects the values of calculated apparent digestibility coefficients of the test ingredient, in addition to the chemical and physical attributes of the test ingredient itself. In research with American alligators, measurement of digestibility of crude protein and energy and the availability of amino acids and selected minerals in menhaden fish meal, de-hulled solvent extracted soybean meal, soybean protein concentrate, ground yellow corn, and wheat gluten was completed. Partial results indicated that mean crude-protein digestibility (CPD) was high (87-94%) for fish meal, soybean meal, and soybean protein concentrate, and energy digestibility (DE) also was good (83-92%). Data analysis to determine CPD and DE of wheat gluten and yellow corn, and determination of amino-acid and mineral availability in all ingredients, is in progress. Results of the project will be used to optimize the ingredient/nutrient composition of diets for cultured pompano and alligator, which can be expected to improve feed conversion efficiency, shorten production time, increase product quality, and minimize feed-related production cost.			
Publications: Lech, G.P., and R.C. Reigh. 2011. Utilization of soybean-based diets supplemented with taurine and phytase by Florida pompano (<i>Trachinotus carolinus</i>). Page 26 in: Abstracts of the 32nd Annual Meeting of the Louisiana Chapter of the American Fisheries Society, Lafayette, Louisiana (January 2011).			

Lech, G.P., and R.C. Reigh. 2011. Utilization of soybean-based diets supplemented with taurine and phytase by Florida pompano. Page 262 in: Abstracts of Aquaculture America 2011, New Orleans, Louisiana (February 2011).

Patro, B., R.C. Reigh, and M.B. Williams. 2011. Dietary methionine requirement of Florida pompano. Page 348 in: Abstracts of Aquaculture America 2011, New Orleans, Louisiana (February 2011).

Participants:

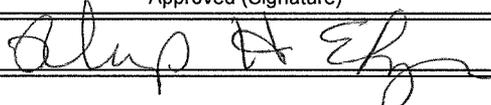
R. Reigh (PI), M. Williams, G. Lech, and B. Patro, LSU AgCenter; A. Davis, Auburn University.

Target Audiences:

Target audiences of the project are members of the scientific community; fish feed manufacturers; the American Soybean Association and the producers it serves; and aquaculturists interested in production of marine fish (Florida pompano) for food, and American alligator for food and hide production. Outreach to these audiences was achieved through presentations at professional meetings and commodity-organization meetings of the Louisiana alligator industry, and in-person consultations with businesspeople. Two graduate student and several undergraduate students have gained knowledge of, and experience with, the development of aquacultural production practices for Florida pompano and American alligator as a result of their work on this project.

Project Modifications:

Nothing significant to report during this reporting period.

Approved (Signature)	Title	Date
		3-23-12