

An Assessment of Nutritive Value and Optimization of Soybean Meal-Based Diets for
Largemouth Bass

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Abstract

We conducted a 10-week feeding trial to examine three soybean meal (SBM) products as surrogates for fish meal (FM) in the diet of largemouth bass (LMB), *Micropterus salmoides*. Following an incomplete 2 × 3 factorial design including two FM replacement levels (50 and 75%), three SBM types (SBM-A, B and C), and a 35% FM control diet (FM-35), seven isonitrogenous (42 % CP) and isolipidic (12% lipid) experimental diets were formulated. Each experimental diet was fed twice daily to triplicate groups of 15 LMB juveniles (15.3 ± 0.32 g/fish) stocked in 110-L glass aquaria operating as a recirculating aquaculture system. At the end of the feeding trial, survival was above 90% for all treatments and was unaffected ($P > 0.05$) by diet. Feeding rate ranged from 3.4 to 4.1% BW/day and was significant higher for LMB fed the SBM – C diets. Despite higher feeding rate, fish in the SBM-C treatments displayed significantly lower final weight, weight gain, and feed efficiency compared to those fed SBM-A and SBM-B diets. Both SBM-A and SBM-B could replace 75% of the FM in the FM-35 diet without affecting the production performance of juvenile LMB. We also found significant ($P = 0.04$) and marginally significant ($P = 0.08$) detrimental effects on final weight and weight gain of LMB, respectively, when FM replacement increased from 50 to 75%. These effects were likely caused by SBM-C diets alone since no other dietary treatment differed ($P > 0.05$) from FM-35 as analyzed using Dunnett's test. Significant effects of dietary treatments were also observed on some of the analyzed blood parameters of LMB, which will be presented. Dietary FM can be reduced from 35 to 8.8% replaced by SBM-A or SBM-B without detrimental effects on the production performance of LMB. Additional studies are warranted to further optimized SBM-based diets for this species.