August 2015

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New Uses for Soybean Products
by Keith Heffernan

U.S. agribusiness is constantly looking for new opportunities to expand markets for agricultural commodities and value-added products. With that in mind, a project called the Midwest Feeds Consortium, directed by the Center for Agricultural and Rural Development at Iowa State University, designed a study to link product development in agriculture with feed demand in aquaculture. What the consortium research found was that the demand for soybean oil meal and soybean products could be increased 2 percent annually. How? By providing up to 30 percent soybean product in the composition of aquaculture feeds used in the production of domestic fish and shrimp.

The consortium recently completed a study to determine the feasibility of substituting soybean oil meal and other vegetable oil and grains for fish meal in aquaculture diets. The intent was to find alternative sources of aquaculture feed that would lead to a decrease in the dependence of U.S. agriculture and the aquaculture feed industries on imported marine protein meals. Worldwide, feed industries have been using approximately 5.6 million tons of fish meal annually.

A key objective of the project was to determine the biological feasibility of products developed and the characterization of digestibility values for feed formulation. A specified diet was fed to four fish species representative of diverse aquaculture sectors and economic opportunities. Broiler chicks were used as a reference terrestrial animal.

The feeding trial results indicate a clear opportunity for the United States to position itself to meet the demand created by a marine protein gap projected for the longer term. The research provided evidence suggesting that, through innovative, value-added processing technologies, viable, co-product ingredients can be used in the aquaculture feed industry. A fish diet consisting of up to 30 percent soybean-based products can decrease feed costs without hindering performance. Tests conducted using corn gluten meal were not as promising, and indicated that the feasibility for substitution was marginal at best.

There is consensus that world fish stocks used in fish meal are being harvested at or above their sustainable yield. With world aquaculture feed production estimated to increase from approximately 8.6 million metric tons (mmt) in 1995 to 15.6 mmt by the year 2000, industries dependent on fish meal will need to find efficient substitute feed components in order to continue growing. The Midwest Feeds Consortium study provides a positive answer to this problem and identifies an opportunity for U.S. soybean growers and processors.

The Midwest Feeds Consortium was funded by the U.S. Department of Agriculture; the other collaborators in addition to CARD were the Animal Ecology Department and Food Science and Human Nutrition Department at Iowa State University; the Oceanic Institute of Hawaii; Kansas State University; Purdue University; and the Greater Des Moines Chamber of Commerce Federation.

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