

Alternative Feeds Research at the National Oceanic and Atmospheric Administration  
(NOAA)

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**Abstract:** Aquaculture is the fastest growing food-producing sector in the world today, and demand for feed ingredients, especially fishmeal and fish oil, has increased dramatically in recent years. Stocks of pelagic species used in fishmeal production are currently managed at or near maximum levels of harvest, and further increases in harvest are unlikely. Thus, alternative protein and oil sources are needed to supplement or replace fishmeal and oil in fish feeds, if further development of the aquaculture industry is to be sustained. Nutrient-dense feeds containing high levels of fishmeal and oil approximate the ideal protein and lipid profiles for farmed fish and are efficiently metabolized for energy and growth. Simultaneous replacement of both fishmeal and fish oil by terrestrial alternatives is problematic and total replacement of both has not yet been successful with marine fish. To address these problems, nutritionists at NOAA and the United States Department of Agriculture (USDA) recently sponsored the NOAA-USDA Alternative Feeds Initiative in the United States to systematically investigate the potential of various alternative feed ingredients for fish feeds. This initiative takes a triple bottom line approach to evaluating alternative feed ingredients which takes into account the economic, environmental, and human health consequences of using an ingredient. The three most promising categories of alternative feed ingredients will be discussed. These are plant protein meals, by-product meals from animal processing, and by-product meals from fish processing. Recent advances at NOAA in developing specialty meals from fishery processing waste for use in alternative feeds will also be discussed.

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