

An aerial photograph of a coastal resort area. In the foreground, there are several swimming pools and a parking lot. A road runs along the coast, separating the resort from the ocean. The ocean is a vibrant turquoise color with white waves breaking on the shore. In the background, a large, rugged mountain rises steeply, its slopes covered in sparse vegetation. The sky is clear and blue.

Oceanic Institute

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Biofuels: Developing the Supply Chain
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Analyze, Process and Test Co-Products from Biofuels, Agriculture and Fisheries

Yeast Culture (papaya, tomato)



Biofuels Algae



DDGS



Sugarcane/Fungus



**Island
Co-Products**

- Mac nut press cake
- Jatropha press cake
- Kukui nut press cake
- Coconut press cake
- Camelina press cake
- Safflower press cake
- Sunflower press cake
- Fish trimmings waste
- Alaska fisheries by-products

Optimizing Feed and Feed Ingredients for Sustainable Aquaculture

- Nutritional Analysis & Quality Control
- Nutritional Research
- Feed Processing Technology

Optimal Feed

Nutritionally balance + Cost effective + Environmentally friendly + Available year round.

Nutritional Analysis & Quality Control

Nutritional Analysis

- Proximate
- Amino Acids
- Fatty Acids
- Minerals
- Vitamins
- Pigments
- Phospholipids

Quality Control

- Ingredients
- Feeds
- Finished Animal Products



Nutritional Biochemistry Laboratory

Nutritional Research

Formulations

- Animal nutrient requirements
- Ingredient nutrient profile
- Ingredient functionality
- Ingredient digestibility
- Ingredient cost
- Processing requirements



Marine fish



Opihi



Abalone



Shrimp



Sea urchin

Factors Affecting Feed Formulation

- Species
- Life stage
- Environmental factors
- Feeding and culture technology
- Ingredients quality
- Feed processing method and process parameters

Nutritional Research

Testing Systems

- Attractant / Palatability
- Digestibility
- Grow-out trials
- Grow-out to market weight
- Taste test



Processing Technology & Quality Control

- Extruder
- Pellet mill
- Expander
- Spherizer



- Particle size
- Pellet water stability
- Pellet durability
- Mixer CV times



Lab Scale Plant



Pilot Scale Plant

MAHALO



Information, Technology and Training Facility

Environmental Marine Science Building

Prototype Aquatic Animal Hatchery

Industry Support Module

Biosecure Nucleus Breeding Center

Photoperiod Building

Brittingham Building

Doherty Building

Administration Building

Oahu R&D Feed Mill

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