

Status of Oceanic Institute's Aquatic Research Feed Mill

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Knowledge of the Sea Ka'ike O Ke Kai

The Hawaii Feed Trap

- Feed is 60-70% of livestock production costs*
- All feed is imported
- Cost dependent on outside market forces

– Ingredient Prices

- 142% increase in corn prices from 2001-2011
 - 2001 (~\$123/MT)
 - 2011 (~\$298/MT)

– Shipping Costs

- 50% increase in Matson charges + THC (2004) from 2001-2010
- Is ~ 30% of cost landed



*USDA, ERS, "Farm Income and Costs: 2008 Farm Sector Income Forecast"

Impact of Feed Prices on Hawaii's Livestock Industry

2001

Sector	Feed (tons)	Value (\$Million)	\$/ton
Beef cattle*	8,000	2.06	257
Dairy*	31,000	12.50	403
Swine*	36,600	4.54	124
Poultry (all)*	31,000	8.10	261
Aquaculture*	1,800	1.30	722
Total	108,400	28.5	263

2008

Sector	Feed (tons)	Value (\$Million)	\$/ton
Beef cattle*	8,700	6.29	650(85%) roughage 970(15%)concentrate
Dairy*	12,587	10.38	825
Swine*	7,132	5.14	720
Poultry (layers)*	15,848	8.16	515
Aquaculture*	1,671	2.36	1,650
Total	45,938	32.3	703

Benefits of Local Feed Development

- Price controlled by internal market forces
- Ensures supply & quality
- Potential export
 - Livestock
 - Specialty feeds
- Promotes sustainability
 - New crops
 - By-, Co-, & waste products



Fishery cuttings

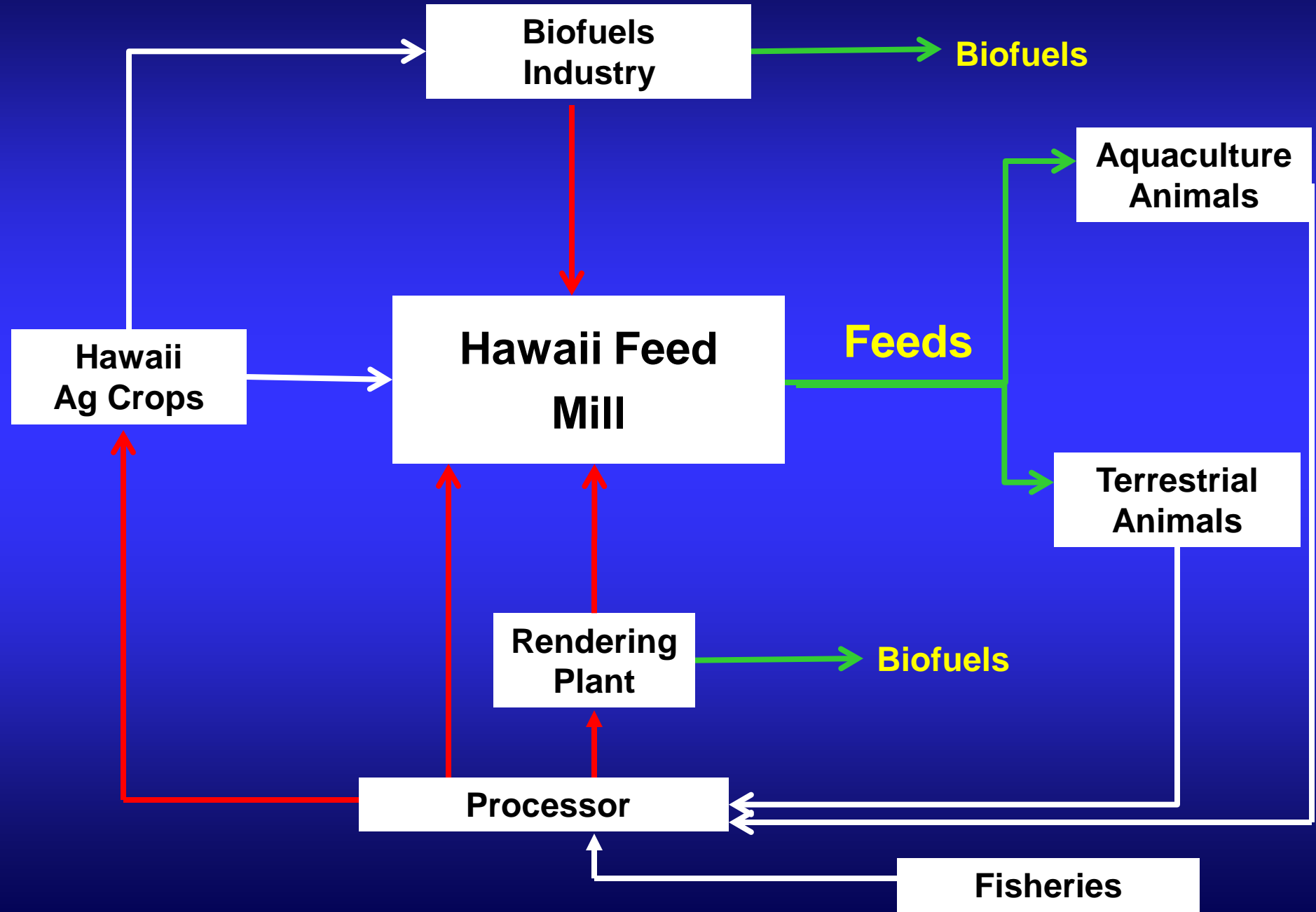


Biofuels protein



Waste sugars

Green Feed & Energy Production



Potential Co-Products

2010

By-Product	Tons	\$/ton
Meat & Bone meal	1,200	250
Soybean hulls	300	200
Wheat mill run	5,000	146
Spent fruit fly waste	520	100
Molasses	50,161	155
Sugar cane leaves	60,000	33
Pineapple skins	No longer available	N/A
Off-grade papayas	3,150	TBD
Boiler ash	N/A	N/A
Fisheries Waste (est.- wet)	4,200	TBD
Algae protein (biofuels)	TBD	TBD
Total	124,531	

USDA National Agriculture Statistics Service, Hawaii Annual Statistics Bulletin, 2010 and The State of Hawaii Data Book, DBEDT, 2010; Personal communication (Lytha Conquest OI) with the Hawaii Agriculture Grower's Association for the major farming industries, Hawaii individual companies, and agricultural distributors, 2010); United Fishing Agency, Honolulu Fish Company, Hawaii Seafood Council (2011).

Impact of Reduced Feed Costs

FCR*	Feed Cost (\$/lb)	Feeding Cost (\$/lb)	Other Costs (\$/lb)	Total Costs (\$/lb)	Farm Price (\$/lb)	Profit (\$/lb)
2.0	1.00	2.00	2.00	4.00	4.50	0.50
2.0	0.90	1.80	2.00	3.80	4.50	0.70

Every **10%** decrease → **40%** increase in profit

* FCR = lbs feed fed/lbs weight gain in fish/shrimp

Oceanic Institute Research Feed Mill



- Not a commercial mill
- Does produce commercial quantities for testing
- Proof-of-concept to attract a commercial mill
- Test ingredients & diets
- Interaction between nutrition & processing
- Model for isolated regions

OI Research Capabilities

Processing Capability	Oahu Mill	Hilo Mill
Hammer mill	75 kg/hr	3,000 kg/hr @ 420 microns
Mixer	300 kg/hr @ 20 min mixing time	4,000 kg/hr @ 3 min mixing time
Pellet mill	5–10 kg/hr	1,500–4,000 kg/hr
Meat grinder	1-2 kg/hr	
Dry extruder	200 kg/hr	650–1,250 kg/hr
Wet extruder	100-500 kg/hr	100–500 kg/hr
Dryer	1,500-4,000 kg/hr	1,500–4,000 kg/hr
Fat coater	N/A	2,000 kg/hr @ 6 min coating time

Current Status

• Opportunity

- All federal construction funds in hand (\$1.1M)
- All equipment in hand and in storage (\$1.7M)
- UH Hilo Panaewa site 25-year lease & extension on building clause to 2013
- Extension on State matching funds to 2013 (\$0.8M)
- USDA approval for both aquatic and terrestrial animal feeds R&D
- Business plan conditionally approved by OI Board

• Threats

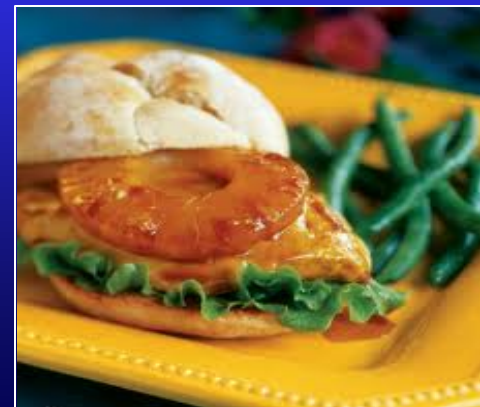
- Loss of PBARC-ARS research funds (FY11 at least)
 - \$300,000/year
- Non-federal match (OI match)
 - \$350,000 plus,
 - \$100,000 in redesign costs
- OMB threat to rebudget “obligated but not spent” construction funds
 - Does not appear imminent for FY11
- OI needs to find a source of lost research funds in Business Plan and non-federal OI match to proceed



Benefits to Hawaii



- Reduce dependence on imports & stimulate the economy
 - Hawaii imports 85% of its food
 - Doubling local agriculture would:
 - ↓ imports by \$119 million
 - ↑ sales by \$237 million
 - ↑ 3,165 jobs





Mahalo
from
Oceanic Institute

