

Comments on Alternative Feeds for Aquaculture Due Feb. 29, 2008

From: John Forster

An opportunity that is not being investigated presently, at least not in the U.S., is to use seaweeds as raw material for marine aquaculture feeds.* While terrestrial ingredients offer the prospect of more immediate replacements for fish meal in aquaculture feeds, the use of seaweeds offers a longer term vision of a self sufficient marine agronomy. Seaweed could be farmed and processed into feeds for fish and other animals without imposing any additional burden on the land or the Earth's freshwater resources and, possibly, without the need for fossil fuel based fertilizer, if farming is done in naturally nutrient rich surface waters or by tapping nutrient rich deep water.

Though realization of this idea may be many years away, it is not too early to start research on it. Seaweeds contain valuable proteins and fats, including DPA and DHA, that are often bound by other constituents that make them resistant to digestion. By using fermentation, enzyme pre-digestion and other treatments to process seaweed biomass, it is likely that these valuable nutrients can be made available for digestion by animals that are fed on the resulting seaweed products, as indicated by recent research in Japan**

It is plausible, though not established, that proteins and fats of marine origin may prove to be of greater nutritional benefit to marine creatures than terrestrial raw materials and that the nutritional value to humans of aquaculture species fed on them may be superior. Some early research to test these ideas seems merited. If it was successful, it would be a boost to present efforts to grow seaweed in Integrated Multitrophic Aquaculture (IMTA) systems because it would provide a market for the seaweed produced. In turn, this would prompt the more general development of seaweed farming for a range of applications and would lead, eventually, to a plant based agronomy in the oceans like the terrestrial agronomy on which we now depend.

*Valente, L. et al. 2006. Evaluation of three seaweeds *Gracilaria bursa-pastoris*, *Ulva rigida* and *Gracilaria cornea* as dietary ingredients in European sea bass (*Dicentrarchus labrax*) juveniles. *Aquaculture* 252 p85-91.

**Kalla, A. et al. Effect of *Porphyra* protoplast supplementation on the growth and feed utilization for red sea bream. In Press.

Sincerely,

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