

I understand that you are looking for input for your Aquaculture Feeds initiative.

I am presently a consultant on a project by Carbon Capture Inc. to remove CO₂ from power plant stack gas using the high alkalinity water required for spirulina growth.

The CO₂ laden water would then be used in pond spirulina production while removing the CO₂ allowing recycle of the growth media to the power plant. This species of algae is > 60% protein with a reasonably good amino acid distribution -- along with the well known pigments -- and has been shown to be substitutable for fish meal in fish diets ranging from sea bream (50% sub) to tilapia (100% sub), but should be tested in a lot more species.

Due to the nature and scale associated with any CO₂ sequestration project, the scale is very large and the first facility operating on a small gas turbine peaking plant is expect to produce more spirulina than the present worlds production. Therefore, we are focused on getting the production cost down from the present niche market prices in the \$8,000/ton prices to the < \$2000/ton price range of other high concentration/quality protein supplies (fish meal, corn gluten, soy protein concentrate, etc). Any production from this type of project will crash the niche market prices down to protein competition levels.

The concept with respect to CO₂ would be the fixation into the algae and then feed the algae to marine finfish with the CO₂ ending up in the ocean and bypassing the atmosphere, where it is causing global warming. This whole project was specifically designed around alternative proteins for fish feeds, which require high protein content and low fiber diets.

Carbon Capture does have in operation a pilot/research facility and the land and power plant licenses for a full scale facility. This pilot/research facility and our future plans could be included in your thinking about your feed initiative. If we can achieve our production cost goals, this could be a very major contributor to fish meal alternatives on the required tonnage basis, while keeping a lot of CO₂ out of the atmosphere. Any significant CO₂ sequestration by this method would result in tens of millions of tons of spirulina per year or other algae being produced (we are also considering other species, some with high lipid and high DHA, EPA content -- I feel that this product should go into fish feeds and human food while using palm oil for fuel production but political economics and subsidies may dictate that it goes into fuel). This type of project would also tie your feed initiative into the CO₂ global warming issue with its larger access to funding and be of more than adequate scale to satisfy the fish feed requirements far into the future.

My position as a consultant doesn't give me the authority to make any commitments, but if you are interesting in working with Carbon Capture on this Aquaculture Feeds initiative, please contact me and I will see what can be done.

Dallas E. Weaver, Ph.D.
Scientific Hatcheries

PS: CCI's staff, board, advisors and consultants include a lot of aquaculturist (some of the best and most successful in the business) along with the power plant, farming, biotechnology and business backgrounds.