

1. What is your vision for California agriculture by 2030?

I believe the California is a world leader in Agriculture and it should be a world leader in Aquaculture. California has the most diverse Aquaculture industry of any other state in the union. We grow shellfish, fresh water fin fish, algae and even ornamentals. However, with over 1,100 miles of coastline, we do not grow the myriad of finfish species that are common to our coast and represent a much needed contribution to our nation's domestic seafood supply. We need to advance marine Aquaculture along our coast and into the open ocean as has been done in other countries around the world. I believe that with the diversity of endemic species we have in California, we can lead our nation in developing a marine farming industry that supplies hundreds of thousands of tones of seafood annually in an environmentally sound and sustainable manner. Our California markets are already importing much of our seafood from nations around the world and that product could be grown here thereby creating California jobs, paying California taxes and decreasing our nation's trade deficit. Industry is ready to receive locally grown product and our universities are ready to help figure out whatever problems we may encounter. By 2030 California could have an integrated aquaculture industry that uses land based farm products to culture fish in the open ocean. This is being done in other parts of the world and we can do it here.

2. What will be the biggest challenge in achieving that vision?

Our Institute has already developed hatcheries (in Carlsbad and Mission Bay) and grow out protocols (in Ensenada) to produce four common California species; striped bass, California halibut, California yellowtail and white seabass. Permitting cages to be installed along the coast in open water (3-5 miles from the coast) where water quality is best would allow juveniles produced in hatcheries to be grown to market size. The hatcheries needed to produce the juveniles would require only modest (1-2 acres) shore front property (access to sea water) to produce millions of juveniles for grow out. We have to have a coordinated permitting process to allow applicants to obtain offshore permits for placing cages and development permits for constructing hatcheries. The voice of California Agriculture combine with that of Resources would be a powerful tool for advancing this goal.

3. In 2030, how has public perception of agriculture changed?

The public will have a stable, year round supply of fresh and healthy seafood to complement the farm raised products they already enjoy. Instead of seafood becoming scarcer and more expensive, it will be far more common, more reliable and cheaper. We already enjoy California Grown produce, meat, poultry and dairy. We need to expand that to include a larger variety of California Grown seafood.

4. What is a "must have" in an Ag Vision for California?

We must have a synergy between Agriculture and Resources if we are going to advance the production of seafood through Aquaculture. There are high value species that should only be grown in California because they are found only in California. Just 10,000 tons of annual production would only require the space of a few football fields and yet it would result in marketable fish with an ex-vessel value in excess of \$80 million. That estimate would not include down stream processing and retail sales. The threat we face is that Mexico already has a vibrant aquaculture industry that is looking to expand by importing our technology. We should reserve the use of these technologies we have developed to advancing our economy by providing

a long-term, sustainable, domestic supply of seafood. The “must have” is that we have to “want” this industry and to facilitate its expansion.

Please feel free to contact me (see below) should you wish to tour either of our hatchery facilities. Thank you.

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