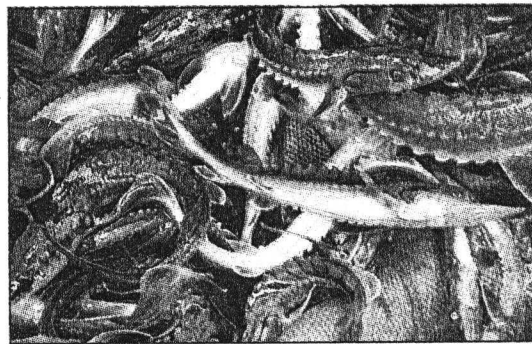


'Future of Agriculture'



Former contractors aim to build world's largest commercial aquaponics farm



SHMUEL THALER/SENTINEL

ABOVE: Jon Parr carries rafts of lettuce to a tank in a former rose greenhouse on Coward Road in Watsonville that he and Drew Hopkins are converting into the world's largest aquaponic growing facility. TOP: Native California sturgeon provide an essential element to the aquaponic process Jon Parr and Drew Hopkins are creating in Watsonville. The sturgeon will also be sold to fish markets and restaurants as they grow.

Agriculture

By DONNA JONES

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WATSONVILLE — Hundreds of native sturgeon, the largest no more than six-inches long, swim inside a 305-gallon barrel in a greenhouse on Coward Road.

The water, containing their waste, is pumped out and through a series of biological filters before flowing into long troughs upon which float rafts of leafy greens.

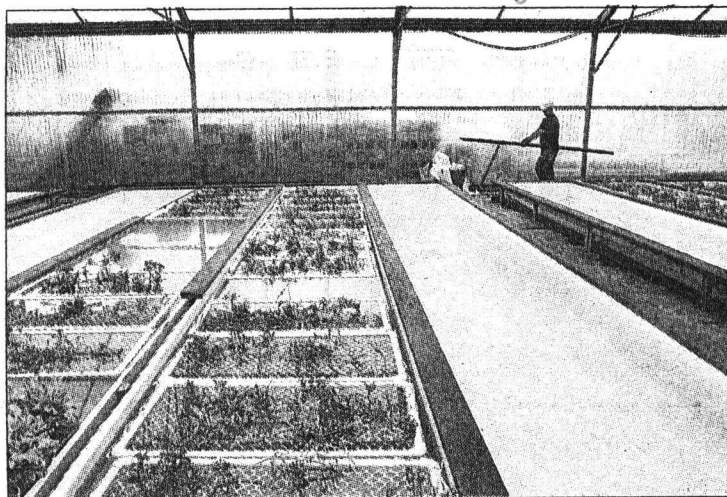
The plants' roots dangle into the water, feeding on the nutrients generated by the fish waste and cleaning the water for circulation back into the fish tank.

This is Viridis Aquaponics, a Pajaro Valley start-

SEE AQUAPONICS ON A2

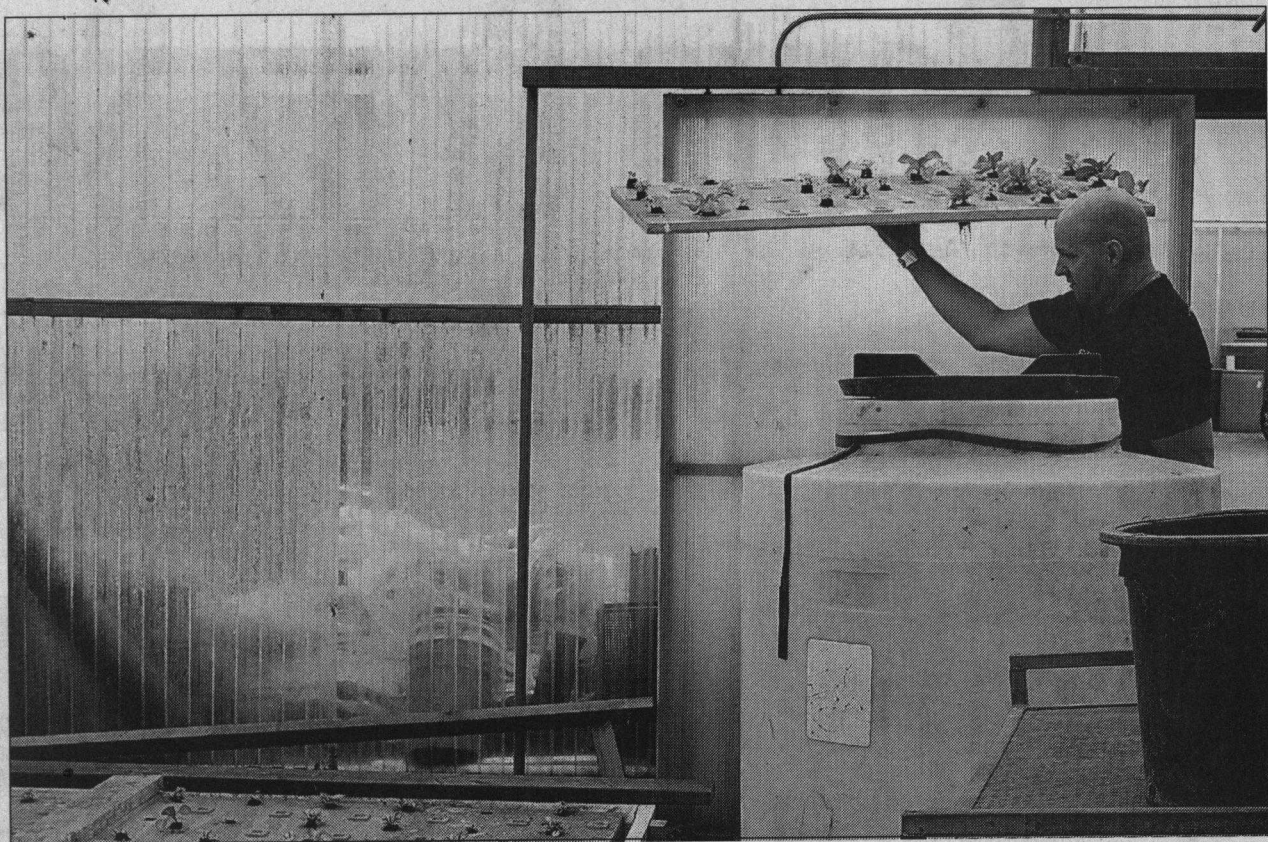
ON THE NET

To see a Tout video on aquaponics, go to santacruzsentinel.com and click on this story.



SHMUEL THALER/SENTINEL

Paul Meyer, who came from Virginia to work with Jon Parr and Drew Hopkins, helps construct tanks where vegetables will grow in the 300,000-square-foot aquaponics farm Parr and Hopkins are building on Coward Road.



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Drew Hopkins transfers a raft of lettuce to another pool.

AQUAPONICS

Continued from A1

up with global ambitions.

Partners Jon Parr and Drew Hopkins are attempting to create the largest commercial aquaponics operation in the country at a former rose nursery. If all goes as planned, they'll fill 350,000 square feet of greenhouses with fruits, vegetables and fish within 18 months, all grown in a sustainable, environmentally friendly manner.

"This is the future of agriculture," said Hopkins.

The concept isn't new. Ancient farmers used the technique. The modern version of aquaponics, which combines hydroponics — the practice of growing plants in water — and aquaculture or fish farming, dates back to at least the 1960s.

But it's never been done on the scale Parr and Hopkins envision for the 10-acre property they purchased a few weeks ago for \$2.32 million.

GROWING PARTNERSHIP

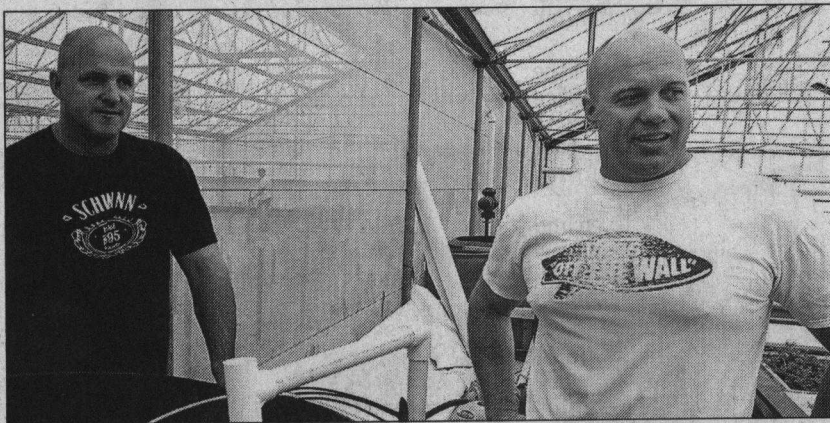
Parr, a Soquel resident, is a former contractor who was casting about for a new line as the construction industry tanked. Aquaponics had been a hobby, and he spent several years researching the topic before hooking up with Hopkins and moving forward with the commercial venture.

A family tragedy brought Hopkins to Santa Cruz from Park City, Utah. An event promoter and contractor, he said life hadn't been the same since his son was killed in a snowmobile accident a few years ago. But in April, he and his wife came to Santa Cruz to visit friends, and during a pleasant evening at the Crow's Nest, began to imagine a new life. He also had been interested in aquaponics, and a friend introduced him to Parr.

Their vision is to create a self-contained operation. The aquaponics system will allow them to use far less water than conventional growers, and no fertilizer or pesticides. To control bugs, they'll regularly infuse greenhouses with carbon dioxide, a by-product of the wood-chip burning gasification oven that will power the generator that will supply electricity.

Aquaponics is so efficient, Parr said, they'll be able to grow a head of lettuce in a month and more than four heads in a square foot, each month all year. A conventional farmer might get one head of lettuce per square foot, and two to three crops per year, he said.

In three years, they'll be able to send 15-pound sturgeon to the market as well.



SHMUEL THALER/SENTINEL

Drew Hopkins, left, and Jon Parr believe that aquaponics is the future of farming.

If it sounds too good to be true, Parr said he thought so too at first. But his research and experience have convinced him it will work.

A READY MARKET?

Not everybody is so sure about the economics, even advocates.

Chris Newman started Santa Cruz Aquaponics in 2009 in a rented Corralitos greenhouse. By the end of 2011, he was out of business and his \$350,000 investment gone.

"It does seem like a great idea, but I'm not convinced the vegetable world is ready for it," Newman said.

In his case, he said, several issues brought the business down, including financing problems, conflicts with partners, and his first choice of fish — the non-native tilapia that faces regulatory hurdles.

But there also was resistance from existing agricultural interests and marketing difficulties.

"From a biosustainable point of view, I was trying to do something responsible," Newman said. "But the market's not paying attention. The market pays attention to price."

Ryan Chatterson also is skeptical about large-scale aquaponics, at least for the present. A biologist, he worked in the field for 10 years, before starting to build his own operation in 2012 in Clermont, Fla., about 25 miles east of Orlando. He's been producing crops for about three months.

He thinks small-scale, local concerns charging a premium to a market interested in healthy lifestyles is the way to go, and once he gets his initial venture off the ground, he plans to grow by opening satellite operations.

Though it took a long time, hydroponics went mainstream, Chatterson said, mentioning a 200-acre operation in Arizona. Aquaponics is a better system because you don't need all the chemical inputs, he said. It too eventually will go mainstream.

"The science is there, the environment, we're going to have to go that way," Chatterson said. "It's just a matter of how quickly we're going to get there."

California, he said, will probably get there first.

A NEW MODEL

Parr and Hopkins are betting on it. Though they declined to say how much they've spent so far, it's clear their investment is substantial.

Parr said his years of research, including investigating what went wrong with failed ventures, will help Viridis avoid mistakes and turn a profit.

But first they have build the ecosystem, which includes tweaking the biofilters to get the microbes working correctly to break down the fish waste. They also are experimenting with different sizes of fish tanks to figure out what works best in a commercial setting.

Only a few demonstration troughs are planted now. But as workers cart out pots of rose bushes, another crew consisting of family and friends is building more aquaponics beds on either side of a row of blue 500 gallon tanks.

Parr plucked a bouquet of red-vine sorrel and oak leaf lettuce from a raft brought from his home garden. The produce will be delivered live, the roots bagged to retain moisture. He said Viridis plans to market to restaurants, where chefs can have greens like basil sitting in a cup of water on the counter top, fresh until the last leaf is picked.

One day, he said, Viridis, which means green or fresh in Latin, will be producing a wide variety of produce, from lettuce and tomatoes to strawberries and raspberries.

"This farm model we're creating is going to be replicated by everyone," Parr said.

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