



February 26, 2003

MARKETPLACE FEATURE

FROM THE ARCHIVES: February 26, 2003

Trendy Sprout Thrives On Water From the Sea

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MANEADERO, Mexico -- In Phoenix, the succulent sprout salicornia sells for \$10 a pound at Whole Foods. In St. Louis, connoisseurs pay \$1 an ounce for the bright green sprigs, which come sealed in tiny plastic trays. And at the trendy Las Vegas restaurant Tre, Chef Edward Farrow purees the stuff and serves it over sea scallops as a \$9 special.

But what diners may not realize is that, on Mexico's Baja Peninsula, salicornia plays a crucial role in a grand experiment aimed at preserving the planet's precious fresh-water supply. Here, the dreadlock-shaped legumes stretch across acres of green rows as Dan Murphy reclaims flatland long declared "dead" for agriculture.

Salicornia is the world's first commercial food product to be grown entirely on soil irrigated by seawater. Now, Mr. Murphy is using it as a platform to subsidize the propagation of a variety of other seawater-tolerant crops. He already has had a few early successes, including sea aster (an edible green), purslain and something called "crystalline," a lettuce found off the coast of South Africa whose leaves shimmer because of flecks of salt crystal along their veins. Still in the works: a plan to grow saltwater-tolerant grass for golf courses.



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Dan Murphy inspects a field of salicornia in Maneadero, Mexico, irrigated with saltwater.

"Every plant on earth has ancestors that once lived only on seawater," says Mr. Murphy, an American who co-founded Saline Seed Mexico SA in 1999. "The trick is to figure out which ones we can grow commercially."

Irrigating a commercial crop with seawater has been a Holy Grail of agro-futurists. Coaxing salt tolerance from plants that thrive on fresh water can be achieved through genetic engineering or -- as Saline Seed does it -- by selecting species that can be "trained" to drink seawater over many generations.

Salicornia was an obvious place to start. Epicureans have dined on *Salicornia bigelovii* -- also called sea asparagus, samphire, pickle weed and sea beans -- for eons. Shakespeare even referred to it in "King Lear" ("Half way down is one that gathers samphire, dreadful trade," says Edgar in Act IV).

Found in the wild, salicornia was traditionally available only during a short harvest season. A sea plant thriving in coastal estuaries, it roots in dry soil that, theoretically, could be located anywhere. That's how Mr. Murphy got the idea that he could raise and harvest it year-round. After dabbling in sea agriculture in places like Saudi Arabia, Barbados and Oman, the Indiana-born farmer raised \$2.5 million with a Mexican partner, Jose Ramon Noriega, and some European investors to start the company.

The idea behind the farming is simple: All life derived from seawater. Therefore, all life, plant or animal, retains a genetic "subconscious" that can be brought to the forefront.

A combination of factors makes cultivation by Mr. Murphy's company possible today. Cheap Mexican farm labor is one; a growing American appetite for organic delicacies is another. Baja has become the backyard garden for gringos craving everything from cherry tomatoes to Iranian cucumbers since the passage of the 1994 North American Free Trade Agreement. As a result, it has an agro-infrastructure that allows a start-up like Saline Seed Mexico to bloom.

Baja's agriculture boom has also inadvertently created the conditions that have made seawater irrigation irresistible. Industrial farming has depleted Baja's underground water supply, leaving fields once green with lettuce and tomatoes barren. Even the olive trees on Mr. Murphy's property no longer bear fruit, in part because Maneadero's aquifer is contaminated by ocean water seeping in as fresh water is drained away.

After three years, Saline Seed is profitable, with annual sales approaching half a million dollars. The company ships as much as three tons of salicornia cuttings a week to Los Angeles, where they are distributed by a local wholesaler or shipped via air freight to Europe. What competition exists -- either from traditional gatherers in Europe or small aquaculture cooperatives in places like Portugal and Chile -- has little impact on Mr. Murphy's sales. "No one else can promise a consistent product year-round," he insists, and that gives restaurants and supermarkets the confidence to promote a specialty product that is, by all accounts, an acquired taste.

"This stuff is so intense, people taste it and their eyes bug out," says Milo Radoja, who works in the produce department at the Whole Foods store in Tempe, Ariz. Shoppers use it as a salt substitute, he says, sprinkled into salad or chopped into bits in an organic rice pilaf. Tre's Chef Edward likes offering salicornia with fish, and he appreciates Saline Seed's year-round accessibility. "Wild product is just so much harder to find," he says.

In fact, wild product is where Saline Seed is finding its newest crops. Mr. Noriega, Mr. Murphy's Saline Seed partner, is a wild plant sleuth. Just as today's fruits and vegetables have evolved from seawater-tolerant ancestors, they have also spawned "bastard" strains of wild offspring. "Birds here in Baja pick the seeds of domestic tomatoes, then leave their droppings in estuaries on the coast," says Mr. Noriega. The result is a wild tomato able to live off seawater. Searching Baja's coastlines, Mr. Noriega has found strains of "sea" guava, celery and sugar beets that should be able to be adapted, like salicornia, to dry-land cultivation.

Long term, Saline Seed hopes its real beneficiaries aren't organic diners but cities and towns that now budget billions of dollars annually to irrigate public lands with fresh water. San Diego's Parks and Recreation Department spends more than \$4 million a year watering the landscape, mainly on golf courses. Indeed, securing water to keep fairways green is Mexico's biggest deterrent to developing coastal resorts, a dilemma that deprives Mexico of billions in tourism dollars.

Saline Seed is already on the case. The company has a second farm that grows seawater-tolerant landscape plants and grasses under contract to the developer of Laguna del Mar, a golf resort in Puerto Penasco on the Gulf of Cortez.

Eventually, alfalfa and forage grasses may be sea irrigation's greatest coup. Beyond Saline Seed's salicornia rows grow a dozen varieties in experimental plots. "The cows we fed it to like it," says Mr. Noriega. Cattlemen will like it, too, he adds. "They won't have to buy salt supplements to add to the feed."

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Updated February 26, 2003

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