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## THE CANDY MAN

Jack Pandol Jr. stands in the silt of his vineyard on the east side of the valley and tries to figure out what damage the rain has done. He had almost made peace with this dry. It would end when it was ready to end. But a drought broken only for a moment by a freak summer storm, "a no-good rain," borders on the cruel. "The worst drought ever," he mutters, "and the sky decides to open up now?" It's late July, and the harvest of table grapes has leaped into full swing. So much fruit hangs on the vine that the whole place feels swollen. As soon as a grape starts to ripen, it's on a fast track to perish. Trouble in a vineyard begins with the microscopic, but it doesn't stay that way for very long. If moisture gets out of hand, the skin on a berry cracks open, and filaments of fungus rot the whole cluster in a hurry. Most table grape growers, attuned to the lurk of mold and mildew, harvest their grapes on the early side. Pandol, who may be the most picky table grape grower in California, which is to say the nation, wants to maximize flavor. He'll hold his fruit on the vine until it reaches peak taste and only then call in his picking crews. For a couple extra points on the sugar register, a measure known as Brix, he'll even risk a week of 105-degree weather. But a rainstorm in the middle of summer? It doesn't happen here.

He would curse the sky, but he knows it won't do any good. His father, Jack, a legend of Delano for the way he went after Cesar Chavez and his campesinos during the labor strikes and grape boycotts of the 1960s, farmed this stretch of valley for more than fifty years. He died in 2010, eulogized as one of the greatest grape growers of all time, a pioneer who opened the market to Chile so that North Americans and South Americans could feast on one another's grapes in their oppo-

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site seasons. His father's father, Stjepo, left the vineyards of Brusje in Croatia on the island of Hvar, more than a century ago and farmed this same dirt. The old man outlasted drought, flood and pests with little more than sulfur dust at his side. He used to tell Jack Jr., "Learn from your mistakes, but don't go to school all your life."

It's been seventy years since the Central Valley Project distributed your mistakes, but don't go to school all your life. Pandol is a first imported flows to the east side. At age sixty-two, Pandol is a child of the System. He's never grown a grape without the Friant-Kern Canal as a presence slashing across the land. During this drought, the federal project has delivered either no snowmelt or very little snowmelt from the San Joaquin River fifty miles to the north. The federal canal is filled with pooled water nearly up to the brim, but it's there only to keep the structure from falling into a state of disrepair. Like so many other growers, Jack Jr. is pumping devilish amounts of water from below the ground. The two old wells on this vineyard went dry more than a year ago. He drilled a third well to a depth of 1,000 feet, and it's about to go dry, too. The bows that retrieve the water were set at 30 feet deep when he dug the hole two years ago, and now they're at 900 feet. That's a monstrous plunge in the aquifer. "I can only afford to dig deeper because I'm growing a crop with good returns," he says. "But how much deeper?"

A dry summer is why a table grape grower can even attempt to grow "nature's candy" in this unfit ground. Every year, Pandol relies on the seasonal drought, from May to September, to visit the valley. The vineyard on its own is already a living, breathing place disposed to rot if not for the farmer's myriad interventions. Add in the emitters of drip irrigation, and it's about all the moisture a California grape can handle. Many of the circumventions Pandol employs during the growing season have to do with keeping the clusters free from mold and mildew. There's no fruit more bent and coddled by human hands than the table grape. What's done in the name of fighting fungus isn't any more of a stretch than what's done to pump up size, color and yield. Crews of workers thin the leaves to allow more air to flow through the berries. They apply sulfur dust and a steady dose of fungicides. But not one of these measures means a thing when a rain like this comes down. "All bets are off," he tells me.

Divvying in from his Bakersfield home, he could see the damage to



the vineyards all around him. The Flames ripened early this year and were a week shy of winding up their harvest when the storm hit. The loss wasn't great. The Thompsons, however, were just finding their rhythm when the rain cracked their skins and their sweet insides started to weep. Mildew set in as fast as the clouds came and went. The farmers watched five thousand acres rot on the vine.

"We need to get the air circulating," he says. "That's why we came in right after the rain and pulled off a lot of leaves. We clipped off berries. We dusted with sulfur and sprayed with fungicides." He feels the sun settle in on the back of his neck. He hopes it comes with a breeze. The sun think we're gonna save it. We may lose twenty to twenty-five percent of the crop. But it won't be a wipeout."

What brings me to the east side of Tulare and Kern Counties isn't an absurd summer storm but table grape varieties that Pandol is growing with water from ground and canal. These eating grapes aren't Flames or Red Globes or Crimsons or any of the other usual varieties. They emerged from a test tube in a lab inside the old Delano farmhouse where his grandfather and grandmother used to live. He will tell you that they are like no other grapes anyone has ever eaten, and that may be true. One of the varieties is a hybrid of two distinct species—East Coast father, West Coast mother—and tastes like cotton candy. Fat, green and seedless, it actually goes by the name Cotton Candy and carries 30 percent more sugar than a conventional grape. With its northeastern lineage, it doesn't panic when it gets rained on. The other grape, Sweet Celebration, seedless and red, is a genetic freak of a different derivation. It was bred by combining the strongest traits inside a single species of grapes commonly found in the United States and Europe. Breeding, though, is only half the trick of altering the taste and durability of the table grape. The other half of the revolution that Pandol is introducing to these fields is the way he tends to his berries right up to the moment they're picked. All through spring and summer, he's been pumping calcium into the tissues of both varieties to boost their natural flavors and enhance their ability to ward off fungal disease.

"The biggest problem with this vineyard is water," he explains. "Not only the lack of it but the quality. It's high in sodium. So we use calcium in the drip irrigation system. I happen to believe that calcium is one of the most overlooked ingredients in growing good fruit. We've way

overdone nitrogen. Nitrogen pumps up the fruit to unbelievable sizes because it blows it up with water. Nitrogen may be great for corn in the Midwest, but it kills the flavor of a grape in California. Calcium, by contrast, kicks out a grape that tastes sweet and smooth on the tongue and it strengthens the cell walls so the skin doesn't break open and rot the whole vineyard."

Pandol is an average-sized guy with green eyes and blond hair that's begun receding since he hit middle age, like his dad's did. His build isn't quite as stocky, and he has only a hint of his old man's sweetly tough face. He says he more resembles the Zaminovich side of his mom's tribe, though who knows what a full-blooded Slav should look like given the roads that have crossed Croatia for twenty-five hundred years.

We're standing at the not-so-pretty edge of the dairy belt in Tulare County, where the Holsteins have more clout than people and much of the ground, middling at best, bristles with alfalfa, the biggest water hog of them all. More than a third of the county's cropland is planted to some kind of hay or corn to feed all those masticators. Alfalfa isn't harvested once but is mowed a half dozen times through the year, so it's pretty much growing all the time, which means it is drinking all the water. For each acre, each irrigation, it takes three acre-feet of water to grow table grapes, but it can take double that to grow alfalfa.

Table grapes are still being planted here, though more and more the money is coming from hedge funds and investor pools on the East Coast. Soil and water being what they are, Pandol decided he needed outside capital himself to convert alfalfa field to vineyard. He found one "very wealthy family" in Philadelphia (he won't say their name) to underwrite the cost of \$40,000 an acre. A good chunk of his eighteen hundred acres scattered across Tulare and Kern Counties, he owns himself. But on this land, he's a tenant farmer sharing the crop with partners in the City of Brotherly Love.

He steps under the canopy of cane and leaves, a gable-roofed trellis system he borrowed from South African grape growers because it maximizes both sun and shade. His boots sink into the earth made spongy by all the compost he's spread. For too long, he says, grape farmers have tilled soil like dirt. He's found over the years that the more fertile the earth—the more potent its microbial matter—the stronger and more flavorful his grapes turn out to be.

Since we converted this ground three years ago, I've probably spread



## THE DREAMT LAND



Jack Pandolfi measures the sugar in his grapes.

fifteen tons of compost. This is the first year we're picking grapes, our first crop. The way it's looking, even with this rain, we're going to pull off something in the range of fifteen to eighteen hundred boxes an acre."

"How does that compare to the old days?"

"When I first got out of school, growing those old varieties with the old T-trellis system, watering by furrow instead of drip, we were probably averaging five to six hundred boxes of grapes an acre. We've tripled production. My dad was using five acre-feet of water for every acre. We're using three acre-feet."

His father was a big-hearted man who loved nothing more than cooking for large gatherings of people, feeding his famous mostaccioli with meaty Slav-style sauce to Richard Nixon and Ronald Reagan, among others. There was an art to cooking that his parents were determined to pass on to their kids. His older sister, Maria, became the food section columnist at the *Fresno Bee* and then worked in the test kitchens for Nestlé in Los Angeles. For Jack Jr., the family cooking gene morphed into a fascination with how science might join art to tease out different flavors in the vineyard. What if he could create shapes and flavors that had never existed before and let each cluster ripen to its fullest? Not the 16 or 18 on the Brix sugar scale that most grapes reach but 20 to 24 Brix.

"Farmers in California, my family included, have been going down one road for at least the last sixty years," he explains. "The way we bred fruit isn't for taste but for shipping. The way we grow fruit isn't for the tongue but for the eye. We harvest early so the fruit doesn't go soft by the time it reaches the market. What does it matter that it tastes like wet cardboard?"

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Talk to most growers and supermarket buyers, and they'll tell you that the consumer wants fruit that's big and colorful. But Pandolfi says that's old-school. Foodies demand flavor. The lack of it is why so many people have stopped eating fruit, or why they buy it once a season but not twice. It's why tens of thousands of acres of peaches and plums, apricots and nectarines are being bulldozed across the valley. He yanks a few berries off a vine and hands them to me. They're swollen and colorful, like the grapes they sell at the supermarket. I bite down, and they're crunchy, too. But they don't taste like a supermarket grape. They taste like the sunbaked Thompsons my father and grandfather used to grow in our backyard. Sweet but not syrupy sweet. Then another flavor, one I'm not prepared for, takes over.

"Wow. Those are really good."

He smiles and nods. "We want you to say, 'Wow.' That's the response we're looking for. And if that sensation on your tongue triggers a recollection of you walking down the midway of the county fair as a kid and eating cotton candy, all the better."

The salesmanship comes second nature to a son whose dad used to travel the world promoting the family's grapes. In the decade since he introduced Cotton Candy, more than fifty thousand acres of his genetically flavored varieties have been planted in the San Joaquin Valley and around the world. Growers pay him a licensing fee and a 5 percent royalty on sales and must adhere to certain quality controls and acreage limits to keep the market from glutting up. From field to lab to licensing to the growing, it's a model his father would scarcely recognize, bending water to grow bent grapes. "All this genetic breeding aside, my father would probably say we're returning to the old way. To flavor. We've forgotten that what brings people back to fruit is taste, the memory of taste."

I first heard about "Junior's" experiments on the farm twenty-five years ago when I walked into a Perko's diner in Delano early one morning and got to chatting with some of the growers drinking coffee and eating eggs and cantaloupe. Sons of the desert, they were descended from men who had been putting grapes in the Delano soil since 1924, when Marin Caratan, a Slav from that same village of Hvar, leveled 160 acres by himself with a team of mules and founded Columbine Vineyards. Soon followed the other clans: Zaminovich, Jakovich, Radovich, Kova-



cavich, Pandol, Pavich, Caric, Divizich, Dulcich, Bozanich, Baksas and Tudor. They filled the pews and collection plates at St. Mary's Catholic Church and exercised such influence that when Cesar Chavez launched the farmworker movement here in the fall of 1965, it tore Delano in two, dividing east side from west side, growers from their Mexican and Filipino farmhands. Even as big-city monsignors marched alongside Chavez and his strikers, Father James Dillon, the parish priest at St. Mary's, had to declare himself neutral. "We've taken a stand that it's not our place to take sides," he told writer John Gregory Dunne, who had come to Delano in the summer of 1966 to tell the story of the California grape strike. "The rightness or wrongness of the strike is something I can't answer. I think it's an economic issue. It's not a moral issue."

Jack Pandol Sr. had a difficult time kneeling in the presence of such holy equivocation. On Sundays, he no longer drove in the direction of St. Mary's for Mass. He drove ten miles east of town to a little Catholic church in tiny Richgrove where, paradoxically, he worshipped with a parish of brown-skinned men and women who worked in the fields. Sitting in the Perko's in 1993, the growers had seen a quarter century pass by since Delano became one of America's civil rights darlings. The wounds of that battle were still evident in their pose. The strikes and boycotts had left them more scarred and distrustful than they naturally would have been, and this caginess had been passed down from father to son.

I told them I was looking to write a different story, one from inside the vineyards about how man and nature were going to greater lengths to out-trick each other. Growers were manipulating an ever-wider arsenal of petrochemicals, and the bugs were responding by creating superspecies impervious to the assaults. Where would it end? They seemed to be all ears—no cell phones glued on back then—as I shared my thesis: Next to siphoning the rivers, nothing had accounted for the growth of valley agriculture more than the rise of insecticides, herbicides and nitrogen fertilizers, by-products of chemical weapons labs idled after the Second World War. For half a century, these chemicals had brought higher yields, higher profits and lower supermarket prices. Farming by chemical calendar—herbicide this week, miticide next week—was simple and easy. In the face of nature's caprice, the applications were among the few things predictable about farming. Who

work of cared to know, that these same chemicals were poisoning our drinking water and polluting our air?

They nodded their heads in consent. No grower had been a more ardent devotee of chemical farming than Jack Pandol Sr. and his two younger brothers, Matt and Steve. They had built their table grape empire ("Three Brothers" was their label) on the trigger of a spray rig. To save on costs, they even bought their own chemical-distribution business. But beginning in the late 1980s, a change had come to Pandol brothers that mystified them. Jack Jr., the middle son, the one educated at the ag school at UC Davis, had talked his dad and uncles into a crazy experiment. On three thousand acres of vines, the Pandols slashed pesticide use by 70 percent and switched from synthetic fertilizers to different blends of compost. On forty acres east of their packing plant, Junior was fermenting ten thousand tons of high-grade stuff. At his side was a ponytailed guru dressed in shorts, a T-shirt and sandals known as Amigo Bob. As part of their communing with the soil, Junior was even insisting that his office workers drive to the piles of compost and stick their hands in the 140-degree heat to feel its life. The growers around the table wrote Junior off as a little goofy. The hippies and the turkey shit, they figured, had gotten to his brain. Then each one of them paid a visit to the Pandol vineyards to take a look for himself. Spiders and leechings, the good bugs, were devouring the bad bugs. A load of grapes was hanging on the vine. The Pandols had always grown a good-sized berry full of color. These grapes tasted even better.

And with that introduction, I drove out in the late summer of 1993 to meet Jack Jr. He had lived at home until he was almost thirty years old, and though he was now married and a young father, he was still careful not to say anything that might upset his dad and uncles. It had taken a great deal of persuasion to get them to agree to go "sustainable," he said. Whenever the counts of bad pests in the fields climbed, they began to panic. "We need to roll out the spray rigs," they'd tell him. "Let's wait a few days longer," he'd calmly reply. "Let's give the good insects a chance to catch up."

The rationale behind the conversion was deceptively simple. In fact, it was a throwback to Grandpa Sjepe. Healthy soil high in organic matter produced a healthy vine that warded off pests and disease. Of course, farming this way was a pain in the ass. When Junior unwisely



cut back on one critical soil supplement, the vines got hit with miles, took three chemical applications to wipe out the infestation. "But that's the way you learn," he said. As we stood in the middle of his composition yard, row after row of black mounds baking in the sun, he lifted a handful of humus to his nose. "It doesn't smell like manure at all," he said, sharing it with my nose. "It smells like good, rich garden soil."

My story about the Pandols jumping off the chemical treadmill ran on the front page of the *Los Angeles Times* in the summer of 1993. A few days later, Jack Jr. got a call from the secretary of the California Environmental Protection Agency. Would he like to come up to Sacramento and join the staff as undersecretary of the agency? He wasn't a politician or a bureaucrat. He wasn't even sure he was an environmentalist. But sharing a farmer's perspective inside the state capitol was an opportunity he couldn't pass up. He and his wife, Carolyn, and their two young children moved to Sacramento, where he spent the next three years at CALFPA. By the time he returned to Bakersfield, his father and uncles had abandoned sustainable farming and decided to split up the operation.

On 320 acres he had bought on his own, Jack Jr. returned to the family habit. He began growing the usual Red Globes, Autumn Royals and Crimsonos with an emphasis on yield, size and color. "I was pumping more water, more citric acid, more nitrogen fertilizer to get that size," he said. "Got to get them bigger because that's what the consumers want." At the time, his son and daughter were playing junior league soccer and tennis. When it was the Pandols' turn to supply the team snacks, Jack went into the vineyard and picked grapes from his personal home supply; bunches ripened to full flavor.

"These kids and their parents start walking up to me. 'Wow, these grapes are so good. How come the stuff we buy in the grocery store doesn't taste like this?' At first I'm tone-deaf. I'm saying, 'You know, it's fresh. I picked it this morning.' But they're telling me, 'No, it's the flavor.' And that's when the lightbulb started to go on. Taste is important. People really care about taste. I had been indoctrinated so far in the other direction, I forgot the basic ingredient."

He decided to start from scratch and create new varieties that pushed flavor in a novel direction. He went looking for local investors and a top breeder to build a lab and develop a program. He teamed up

with Sunrise Nurseries and David Cain, one of the most innovative plant breeders in the country, and formed International Fruit Genetics. By the spring of 2001, Cain had developed thousands of crosses, each genetically unique. On small test plots outside Delano and Arvin, Pandol grew the most promising offspring. Five years later, under the brand name Flavor Promise, he was picking the first varieties of seedless grape that ripened early and tasted like a conventional grape, only far better. "It was more than sweet," he said. "It was sweet plus flavor."

It was sweet plus flavor that persuaded a small grocery chain in San Diego to market his marketing wiz persuaded a small grocery chain in San Diego to take a chance on the grapes. Pandol labeled his bags the way winemakers label their bottles of wine. The tag told a small story: "These are the best grapes you've ever gonna eat. Tell us what you think." He signed his name to the Flavor Promise pledge and provided his e-mail address so customers could respond. The chain agreed to take two boxes a day of sweet Surrenders at each of its markets. Within three weeks, they were ordering full loads, running through fourteen boxes a day. "It blew other minds," Pandol said. "It blew our minds. 'Hey, we've got something here. And that's when our breeding started to get creative. How do we find flavors never delivered by a grape before?'"

The problem with seedless grapes is they have no seeds. Table grape growers in California, a fraternity of stressed and punctilious men, spend an inordinate amount of their days trying to make up for this fact. When breeders decided to remove the seed from the berry, which wasn't the first time man messed with the genus *Vitis*, they castrated an entire family of grapes. Without the seed, the vine no longer produced gibberellin acid that naturally thinned every bunch and sized and colored each berry. To replace the seed's function, grape growers apply a synthetic form of gibberellin—agriculture's version of the human growth hormone—in a series of methodical sprayings from spring to summer. Gibbing, they call it. They swear that a single small error in their gib coverage, one drop too heavy or too light, one day too soon or too late, is enough to change everything. Problem is, they won't know how badly they screwed up for another ninety days, when their mistakes stare up at them from the bottom of a clamshell box. "I deal in parts per million" is how the table grape grower describes his life.

The absence of seeds forces breeders such as Cain to reach across







shipped out from Arkansas—horticulture's version of a stud. The mixing of the two, a dab of pollen applied with an artist's brush, produced hundreds of green berries.

With scalpel, tweezers and microscope, Cain cut into the tissue and excised the seeds that were the premature babies. He placed the seeds into petri dishes filled with seaweed extract and let them sit for two months, until they grew into a kind of callus. Inside each callus rested an embryo containing the combined DNA of its mother and father. Cain and his crew then delicately transferred each embryo into a sterile test tube filled with solutions of sugar, nitrogen, potassium, phosphorus and magnesium. Sealed shut, it became an artificial womb. After six weeks of feeding and stretching, the babies measured three inches long, with hairy roots on one end and faint leaves on the other. That winter, Cain and his crew pressed each spindly plant—ten thousand of them—into containers of potting soil and stuck them in a greenhouse. By spring, each one had turned into a distinct vine. Each one, brother or sister to the other, shared the same mixed lineage and yet was completely unique in its own right. The vines were now big enough to be transplanted into real dirt on the eighty-acre vineyard where Pandol's grandparents had lived. It took a year or two, first leaf to second leaf, for the vines to produce enough fruit to distinguish the promising crosses from the mundane. The special ones, like Cotton Candy, were given a chance to produce real grapes in a real vineyard. The ordinary ones were yanked out.

"We're looking for thin but strong skins, hardy color, no discernible traces of seed, with a nice crunch," Cain explains from inside the lab. "The supermarkets don't like grapes that are reddish black. They want grapes that are either red or black. Of course, one of the main things we're now aiming for is flavor that dazzles. A good sugar-to-acid balance. You need acid to stop the sweetness from sitting heavy on the tongue."

Cotton Candy was standing in the middle of the test plot, row 48, vine 221, he recalls, when it began to fruit in 2005. He popped the first ripe berry into his mouth and wasn't sure what to make of the flavor. "I wasn't looking to create a grape that tasted like cotton candy. I kept saying it was burnt sugar, a caramel flavor. I wasn't sure how other people would react to it. One of the workers took some bunches home to his

family, and his kids loved it. They said it tasted like cotton candy. That sounded as good a description as any."

I hop into Pandol's Toyota 4Runner and we land in a vineyard where the crosses are so fantastic they'll never go commercial. Here, a grape called Sweet Sapphire, a black seedless variety that looks like an amputated pinkie finger, dimple on its blunt end, is finding its last color and

sugar. They're plenty good already. But

"These are probably nineteen Brix. They'll easily get to twenty-

we won't harvest for another week or so. They'll easily get to twenty-

or Brix without losing any of their crunch." He'd been watching Sweet Sapphire grow in a test plot for two years and dismissed it as a gimmick. The shape struck him as too grotesque and he got popping the berries into his

for even a novelty grape. The more he kept popping the berries into his

mouth, though, the more the flavor won him over.

"It's not like Cotton Candy. When you eat it, you know you're eating a grape," he says. "But it has a lot of flavor still." After that first harvest of Sweet Sapphire, Pandol received several e-mails from customers in Florida, singing the praises of "the black grape." He didn't know which black grape they were referring to. None of them, oddly, mentioned the most defining thing about the fruit, its shape. "It's really easy to grow, and we get big yields. And it's a tough grape. It travels well."

I pluck off a berry and roll it between my thumb and index finger. Strange. Where does this elongation come from?"

"A gene from the Middle East."

I give it a bite. With Cotton Candy in my head, my tongue has a hard time dialing back. "That's a good grape."

"In another week," he vows, "that will be a very good grape."

We head seventy miles south across the Kern County line to his vineyard near Weedpatch. This is where my own grandfather's story in America began, where his uncle dropped him off in the summer of 1920 to work for Villa Kerkorian, the big shot who grew Thompson seedless grapes on ranches up and down the valley before it all went south in the raisin glut of 1922. We are greeted by an expanse of uninterrupted vineyards, orchards and fields. From my grandfather's arrival to the present, the irrigated cropland in Kern County has jumped from 140,000 acres to 900,000 acres. Back then, 10 percent of the farmland





The test tube grape called Sweet Sapphire

regular farmer to compete. That's why I went to Philadelphia to find investors."

Half the farmers in the valley are being propped up by outside dollars, so no shame there. While the national media fixates on the woes of a parched California, farmers are teaming up with hedge funds and pension groups looking to make 20 and 30 percent on their money. Good luck getting it. They'll be lucky to clear 5 or 10 percent. But that's not the point. The investors are here in the first place, betting on California, because of the insane magnificence of our hydraulic system.

"It's magnificent until it isn't," Pandol says. He recalls his reading of Genesis, how Joseph had a vision that there would be seven years of drought, seven years of dearth. This gave him seven years to prepare for the hard times. He filled the granaries of Egypt with so much wheat it was like the sand of the sea. The seven years of famine came true but not in the land of Joseph's Egypt.

"We have a prophecy, too," he says. "It's called history. We've always had droughts and always will. But we pretend it's not going to happen again."

He then makes a concession that maybe only a Kern farmer who's also been undersecretary of the California EPA would make: "Across this whole southern valley, we've planted fencepost to fencepost. And there's just not enough groundwater to keep it all going."

The diverters of the Kern River had never gotten together and portioned out the water supply like they did next door in the Kings River

basin. Instead, for the past half century, the development of Kern agriculture was allowed to outstrip the groundwater supply, and not by a little. Today, Kern County finds itself in a forever state of overdraft. Some years, the unsustainable pumping is near one million acre-feet. Pandol understands the need to finally regulate groundwater and limit pumping to levels that are considered "safe yields." But he's worried that once the new law goes into effect, the fallowing of farmland will find no end.

"You're talking about hundreds of thousands of acres in the valley that will have to be fallowed to achieve a sustainable aquifer," he says. I don't tell him that the head honcho at the water agency in Bakersfield is citing a figure of 300,000 to 400,000 acres that will have to be fallowed in Kern County alone unless agriculture can find a way to undermine the law, which it's actively trying to do. Some big farmers are installing wells on third-rate land inside proposed "groundwater service areas" to establish a record of pumping. This way, before the teeth of the law bite down, they can transfer that "historical use" to their better ground inside the same area. By inflating their demands now, they can secure themselves a more ample "sustainable" supply in the future. "The enviros could really give a rat's behind about us," Pandol says, suddenly sounding like his father. "They don't know what we do here and what it takes to do it. We've got eight to nine million irrigated acres in California. And more than half of those acres are planted to crops that can't be grown anywhere else but here. Is that not worth saving?"

We pull into his vineyard outside Lamont, where a crew of farmworkers each one a veiled secret, are picking a seeded black grape called Sweet Jubilee. Sam's Club won't be ordering these. Neither will any of the other U.S. buyers who happily compete for Pandol's seedless varieties. The Sweet Jubilees are headed to Asia and Mexico, where people not only don't mind seeds in their grapes but prefer to chew them.

Pandol had hoped to give the bunches more time on the vine, to catch their full flavor. He now sees that the rain fell heavier on Lamont, so he's not sure how far the Sweet Jubilee can travel without succumbing to mold. He's going to send some berries back to the lab, where they'll be crushed inside a sterile petri jar and allowed to incubate for







He tosses me another. "I call it the Lollipop grape. It tastes like a kid's sucker."

"You can really tell the Concord in it, that's for sure," I say. "When you breathe out, it's almost like perfume on your breath. It's too thin-skinned to go commercial. The minute it gets ripe, it splits and turns into a rotten mess. But I keep it here because I just love eating it."

We climb into his 4Runner and carve a path through layers of valley dust suspended in the air. We arrive back at his headquarters, a big white industrial complex skirted by vines and palm trees. Workers are stacking boxes of warm berries onto pallets and tying them down for a stay in cold storage. He throws a couple bags of Cotton Candy into my backseat and tells me to enjoy them. I tell him my acceptance of his gift counts as a crime of journalistic ethics, and he laughs in my face.

I leave Delano in the throes of harvest, wondering if agriculture is now doing to fruit what it has already done to soil, river, aquifer and man. I ponder Luther Burbank laid to rest under the big cedar of Lebanon at the Luther Burbank Home & Gardens in downtown Santa Rosa, only for the cedar to die of root rot. He had once crossed the California black walnut with the English walnut and created the Paradox walnut, which seemed not to know where to put its catapult energies. It threw out walnuts with thinner shells and bigger kernels but with branches and limbs that dwarfed every other walnut tree. The Paradox soared in its youth to sixty feet tall with a trunk that measured two feet wide, a true freak. So much vegetative growth weighed down its sprawling arms that they had to be propped up with metal crutches. The Paradox that the wizard planted in 1914 still graces the grounds of his old garden, a brittle giant with gorgeous gnarls and sweeps that can't stop itself from growing. Once Burbank realized that his Paradox was never going to be a prolific producer of nuts, he thought it might make fine wood for furniture, only to discover that its rapid cellular growth produced a wood too porous. What the Paradox finally became was a vigorous and disease-resistant rootstock that more fecund varieties of walnuts could be grafted onto. The Paradox is still grown commercially today, but it's hardly the same walnut tree that Burbank bred. A century of genetic mutations have appeared spontaneously in various orchards. At the same time, generations of breeders have continued their tinkering of Burbank's tinkering in the lab. Together, nature and science have forever splintered the Paradox's chromosomal makeup.

How fancy can the table grape get? How far can Jack Pandol Jr. take the sunrise and sprinkle it with dew? How much more can he push grapes to sugar before they become not "nature's candy" but confessor's candy? I expect the obesity police will soon be on the prowl for Gum Drops, Brix 26. He isn't taking taste back to memory, they'll be using science to create new tastes that obliterate memory or He is using science to create new tastes that obliterate memory. He's now hired a molecular geneticist out of Cornell to identify exactly which genes in a given cultivar express the traits of mildew resistance or extra yield or that citrusy flavor on the back end. He believes the ability of molecular science to single out these markers will guarantee precision when he tailors his next generation of flavored grapes. As he powers forward in his vision, he seems not unlike the artificial intelligence boys in Silicon Valley moving forward in theirs, with a belief that the pursuit alone is cleansing. This is not to say that he hasn't been thought to its implications. Obesity and diabetes, if you don't count meth and opioids, are the two great robbers of life in this valley. But each harvest season, as Pandol samples his fruit and gains five pounds, he comforts himself with the knowledge that fresh fruit, for all its sugar, delivers healthy phenols for the heart. He reminds himself that candy has been stealing flavors from fruit since candy began, and when fruit turns around and does the same, it can be a slippery slope. Fruit isn't candy, he knows, nor should it try to be. But while he respects the line between the two, he isn't precisely sure where to draw it.

As I approach a stinky dairy outside McFarland, I reach into the bag of grapes, yank a Cotton Candy off the stem and pop it into my mouth. I pop another and another. The line, my tongue tells me, already has been crossed.