

How did I get here? A strawberry journey.

My name is Olivia Fronteras and I'm a strawberry plant.

I was born on a hot summer day in a valley below a snow-capped dormant volcano, Mount Shasta in California.

Mom's second daughter and her identical *clone*, I grew up among my 200 sisters. Cousins? The green rows of their tops stretched all the way to the horizon.

In front of me on the *stolon*, a cord, that connected all the daughters to Mom, my older sister, Clara, flourished. First in the feeding line, she was ahead of all girls, putting her own roots down, acting independent. What a show off! Behind me, the third daughter, Isabel, stretched her little leaves toward the sun. And after her, my baby sisters clung to the cord, no bigger than cute green buds.

I didn't know my dad and neither did Mom, but a fellow in rubber boots, Mike, became our step-father. He fed us with a nutritious cocktail that dripped from the tubes into the soil around our roots. His crew helped some troubled girls with their heads in the clouds to find the ground and root into it. A herd of long-legged deer came one morning and began shredding leaves on every strawberry plant. I heard the roar of Mike's truck and by the next night a fence separated us from the salivating ungulates.

By September, daughters of all Fronteras families mixed together in a crowd so thick, I could barely see Clara and Isabel. As the days got shorter, we watched birds fly south in their perfect V formations. A dusting of white crystals covered our leaves in the mornings. All strawberries began preparing for the winter. Like bears who get ready to hibernate, we began packing resources into our storage tissues, the *crowns*.

Giant stadium lights lined up on the field sidelines. The show started the following day. First, all the irrigation lines slithered away like black snakes. Next, we got crew cuts by a mower that trimmed all of our leaves. When the sun dropped behind the jagged line of pine tree tops, the lamps illuminated the action. Before I could assess my new look in the limelight, a digging combine rattled towards me. It stuck its metal fingers under our roots and lifted me, my sisters, my cousins, and Mom onto a conveyer that delivered us to a cylinder-shaped cage. We tumbled and spun in it, dropping soil from our roots and losing sight of each other before falling into a plastic bin. That was the last time I saw Mom.

The forklift floated the bin in the air under a roof of a shed before setting it down. In a split second, warm hands in blue gloves turned me sideways, sliced off the endings of my roots and bundled me with nineteen other neatly trimmed girls with a rubber band. A belt moved our group to the cardboard box where a thousand more young strawberry plants laid squeezed to each other. The clear lining surrounded us like a bubble. The box closed from the top and it

became dark and chilly. Roaring of truck engine for what seemed like a day kept me awake. The motion finally stopped, but coldness remained. I lost track of time.

When the box opened, warm air and sunshine rushed in. Before I fully defrosted, another pair of gloved hands stuck me into the balmy soil covered with black plastic. A drum beat and a solo on tuba announced my arrival. "*Mi Corazón...*" blasted across this new field.

An avian creature with yellow beak and webbed feet walked toward me. Unlike the birds I saw in my nursery that ate worms and flies, this one was holding a taco. It passed me, uninterested, leaving fan-shaped footprints on the shiny surface.

On the strawberry bed around me, poking through slits in the plastic, trimmed heads of other girls from the Fronteras clan basked in freedom. On a neighboring bed, unfamiliar transplants relished in the sun rays.

"I'm Olivia Fronteras!" I introduced myself to a girl across the furrow.

"I'm Sophie Albion!" she replied.

Before I could ask Sofie any questions, the droplets began to fall from the clear sky. They bounced and splashed, landed into my planting hole and turned the dust in the furrows into mud.

Drenched, I sat in my wet hole, wondering: what happened to winter and why is it summer again? A silver box on wheels with a sign on its side *Gonzales Tacos. Oxnard, CA* drove by, followed by the winged creatures with yellow beaks.

Sophie grew slower than me, but the little know-it-all let everyone hear her.

"I'm here for the fruit stand, everybody loves Albion berries. We have an irresistible charm and sweetness." She bragged.

"I haven't heard of your family in the nursery." I interrupted.

"Ah, yes, I'm among the few exceptions in our clan," she continued unfazed. "Most of the Albion girls grow up in low elevation nurseries, away from The Mountain. After they dig those daughters out in December, they keep'em near freezing in giant coolers until it is time to travel to fruiting fields in summer."

"Getting frozen alive and then waking up in the future? Wow!" I pretended to be excited.

"Yes, and once defrosted, they have incredible vigor. Unlike me." A note of jealousy soured Sophie's chirping. Her compact appearance contrasted with lush leaf canopies my Fronteras bedmates stretched toward each other.

"But at least you got to see The Mountain." I consoled. "And, did the winter get canceled?"

“Winter? It shrunk into the crispy September days we spent in the nursery. And, let’s face it, girl, we packed on a lot of carbs during those cold nights. Now, let’s get rid of’em! Who’s ready to dazzle this place with flowers and delicious fruit? I bet we’ll have some berries by Thanksgiving!” Sophie was on a roll.

I looked at the palm trees swaying on the edge of the field. It is still October. Are we just like those snowbirds who escaped the cold to a tropical paradise?

In the following days, the hot Santa Ana wind whirled dust and garbage over us. It pressed our young leaves to the ground, pulling water from them. The rain from the cloudless sky reappeared, rinsing us in 30-minute sets. Still, after three days in the sauna all strawberry plants were exhausted.

The wind must have blown in the tiny spider-like creatures, *mites*, that showed up on undersides of our leaves. They explored edges and crevasses, spun webs and sucked our juices. The eggs they laid hatched and the rumbunctious kindergarteners scattered from leaf to leaf looking to inflict more damage.

The morning after the wind died, a gray-haired man in glasses snapped off one of my leaves and squinted at it through the lens, examining the underside of the blade. He dropped it into a furrow, scribbled in his little notepad and left with a hum.

I couldn’t shake off the pesky mites but Sophie had an even harder time. Her energy diminished with every drop the spider mites stole from her. The loud girl turned pale green and quiet. A few of her leaves had a hue of yellow.

The help arrived the next day, accompanied by a catchy cumbia tune. Out of a plastic bottle dry sparkling flakes dropped on our leaves. Red mites parachuted down on them and went on the attack upon landing. They ran around with endless energy, missing most of the clumsy spider mites, but occasionally stopping to munch on the sucking pests or to snatch their eggs. A week later our leaves were clean.

“*Persimilis!*” Sophie read the name on the bottle left near her.

“Thank you!” the strawberries waved their rejuvenated leaves at the industrious little predators.

Albion girls continued to lag behind the Fronteras. By the time their bed exploded with white flowers, my sisters and I already sported red, perfectly-shaped fruit. Short days felt great and so was being the center of attention.

“Albion is a *day-neutral*, an *ever-bearing* variety,” Sophie reasoned, “we mature later than *short-day* girls like you, but we’ll produce fruit forever, no matter what day of the year it is.”

Unlike the previous rains that arrived on schedule from the cloudless sky, the January downpour came from the ominous grey blob that spat bolts of lightning. The shower felt rejuvenating, but my precious fruit suffered. Their skins softened under the persistent bombardment of droplets

and the invisible *spores* infested their wounds. These spores germinated and grew, feeding on the sweet berry juice. The grey fungal net, *mycelium*, encroached on fruit after fruit, flower after flower. In despair, I watched pickers in yellow rain jackets strip infected berries from me and toss them in furrow. Bloated, they bobbed in murky water like dead fish.

The west wind blew away the angry clouds at last. Was I happy to see my new set of ruby gems shine in the sun! Everyone was! The berry stand customers who savored my crimson delights kept asking for Sophie's fruit nevertheless. When her large burgundy berries finally arrived, that was all everyone wanted.

"Mm...These're the whest wavvies in da wold," an excited little boy commented, his full mouth dripping with juice at the corners. His mom bought the whole box. It was Sophie's time to shine.

The warm days in May catalyzed life in all its forms. Fruit ripened overnight. Thrips and aphids that multiplied on leaves got attacked by predatory pirate bugs, busy building their own families. Weeds, ignored by rushing harvest crews grew above us, stealing our nutrients and light. Someone was buzzing, chirping, swaying or obstructing the view in every direction.

In the middle of the gloomy June, the sun burned through the blanket of fog and brought the merciless heat.

"I'm everbearing, I will never stop," Sophie sounded cavalier, as usual.

But a few of her leaves began to wilt. In the following days in the relentless sun, Sophie's foliage drooped and her gorgeous fruit began to shrivel.

"Drink water, Sophie," I cried.

She didn't answer, and by the end of the scorching week she became a crispy skeleton, crumbling into brown papery fragments.

"The vicious soil fungus, *Fusarium*, got her." I heard a sad whisper of the Fronteras girls.

"I feel it on my roots too," one of them complained, "but the Albion girls have no resistance to it at all. Sophie let this pathogen deep into her drinking straw, *the vascular tissue*, and the fungus plugged it up. The poor thing couldn't move water to her leaves and dried out!"

Devasted, I sat in the crowded bed, watching Albion girls across the furrow succumb to the intruder one by one. *Will I be next?*

The long days of July with less food and water became exhausting. By then, I must have produced over a hundred berries. My flowers became smaller and fewer and my leaves lost their youthful elasticity and shine. I wanted to run and I did. I tossed out a stolon into the furrow and sent my remaining resources to a couple of new babies that popped on it. The little green buds, the new Fronteras sisters.



Mount Shasta towers above the Butte valley, where strawberry mother plants produce daughters



First daughters connected to mother plants by stolons/runners look to put their roots down.



Mother plants in rows produce stolons/runners on which daughters develop and fill the nursery field. After cold nights in September, plants move resources to the crowns and the leaves can change color.



Mowdown of leaves before digging



Mowdown in the early morning continues



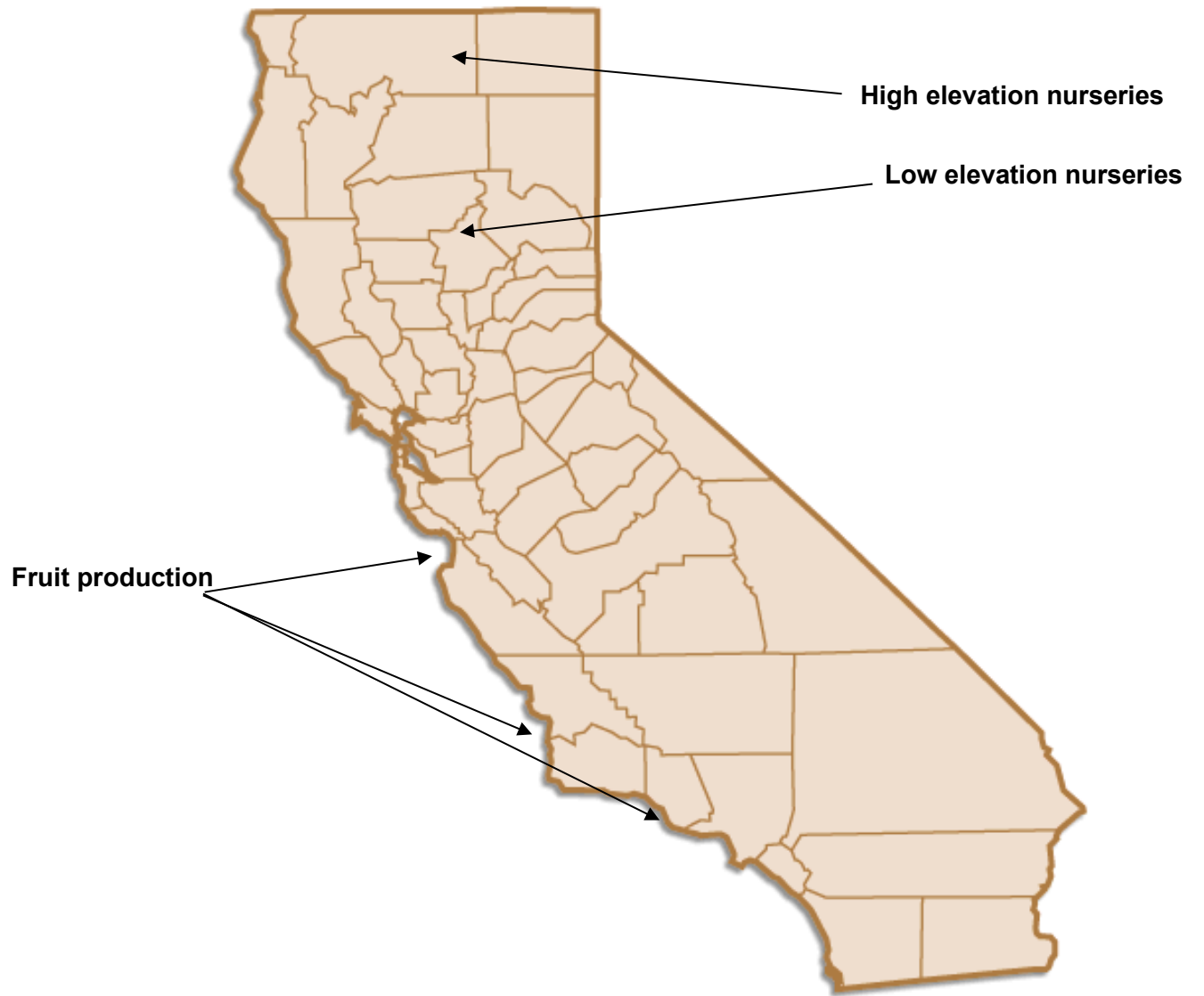
The metal fingers of the digger lift plants to a conveyor



The spinning cage with a brush removes soil from strawberry plant roots



Two daughters, trimmed and ready to travel to fruiting fields



Map of California showing locations of nursery and production fields



Once in warm Oxnard soil the trimmed transplants develop their canopies in November



Persimilis, a predatory mite (red), munches on two-spotted spider mite on strawberry leaf



Perfectly-shaped Fronteras strawberry fruit in Oxnard, CA.



***Botrytis* gray mold covers the fruit with mycelium after prolonged rains**



Strawberry infested with Fusarium wilt dries and desiccates