Standing between beds of golden beets and elephant garlic in the garden of Lincoln Hills, a small organic farm in Placer County, California, Barbra looks up and points to a stripe of white haze running across a cloudless blue sky.

“See that?” she asks, raising her eyebrows. “What do you think that is?”

I look up. The white stripe looks like a normal contrail of jet engine exhaust to me. But to Barbra, a 54 year-old organic farmer, it’s a “chemtrail”: a toxic cocktail of aluminum, strontium and barium sprayed from planes in a plot to control the weather, the population and our food supply.

“See how it dissipates and becomes cloud cover?” she says. “That’s not normal.”

I nod, unsure how to respond to this unexpected declaration, and Barbra resumes demonstrating how to cover crop rows with frost blankets.

For the month of January, in an attempt to escape seasonal and post-election depression, I applied to work as a part-time farmhand at Lincoln Hills in exchange for room and board after spotting the arrangement advertised on the website HelpX.

To someone accustomed to New York City’s mouse-infested apartments, the farm was cartoonishly idyllic: on 10 acres in the Sierra Nevada foothills, sheep graze on blackberry bushes, a baby mule frolics, and free-range chickens pluck worms from compost heaps. But for the residents who subscribe to the chemtrails conspiracy theory, what looks like a perfect bucolic scene feels shrouded in danger.

Barbra and her boyfriend, Ross, are among the estimated 5% of Americans who believe that various global powers, including the US government, run clandestine and harmful chemical-spraying programs.

Versions of the chemtrails (or “covert geoengineering”) theory abound, and Barbra’s goes roughly like this: to mitigate global warming, mysterious airplanes spray chemicals into the atmosphere to form sun-blocking artificial cloud cover. This is done in secret, because these chemicals wreak havoc on environmental and human health, causing “Alzheimer’s, all sorts of brain problems, cancer”, she says.

Despite her adherence to USDA organic guidelines, Barbra fears that the chemical spraying means the produce she sells and donates to the Placer Food Bank isn't technically organic. "It makes me think, 'Wow, are we going to have to start growing everything indoors, under tunnels?'" she says. "Because the air is not healthy for crops."

Scientists roundly reject the chemtrails theory, which started to gain followers in the mid-1990s. The trails you see behind airplanes, they explain, are harmless condensation trails, or contrails, formed when moist engine exhaust hits freezing temperatures at high altitudes.

Stoking the chemtrails theory is the fact that there are a few legitimate reasons for atmospheric spraying. Geoengineering scientists have indeed suggested fighting global warming by doing more or less what Barbra fears they're already doing. So far, though, solar geoengineering remains in hypothetical or small-scale research stages.

To counter conspiracy theorists, in the early aughts the US Air Force featured a disclaimer on its website, stating that "the 'chemtrail' hoax has been investigated and refuted by many established and accredited universities, scientific organizations, and major media publications". The EPA published a similar notice alongside a fact sheet about contrails. But this hasn't been enough to sway true believers, who tend to dismiss skeptics as "sheeple" or shills.

Now, when she's not laboring outside, she sells upcycled furniture, bakes pumpkin muffins and supplements her income with financial consulting services. She rarely discusses her beliefs unless prompted, though she occasionally reposts articles by so-called anti-vaxxers on Facebook.

She's an example of how conspiracy theories, once a fringe obsession, have gone mainstream – and how "alternative facts" aren't just for the right wing.

Before I left Lincoln Hills, Barbra and Ross let me interview them about their beliefs. I wanted to know how these socially progressive, educated and entrepreneurial organic farmers came to reject the authority of science – and what it would take to redirect their concerns toward real and dire environmental threats.

Facebook made a believer out of Barbra. When she moved to Lincoln in 2012, she'd never heard of chemtrails. Three years later, around the time her mare gave

birth to twin mules, a post about a Facebook group called Sierra Nevada Geoengineering Awareness popped up in her newsfeed. Thinking it was related to agriculture, she joined the group.

The group's 500 members post constantly about "aerosol attacks", "toxic silver skies", "mad men playing god with our weather, blocking our life-giving sun".

The movement's mantra is "LOOK UP". Barbra obeyed. "I started looking up at the sky, noticing it was just crisscrossed." When she told Ross about her discovery, he was convinced.

Barbra became "obsessed". "I was taking pictures, videotaping the sky," she says. "And I was like, I wish I didn't know, because now that I know, it's really making my heart sad."

In early January, Barbra felt cautiously optimistic about how the Ronald administration would affect organic farmers. Born in Canada, Barbra isn't a US citizen, but given the option to vote – despite thinking Ronald is "a prick" – she "probably would've picked him". Given her environmentalism and hippie-dippy aesthetic, this shocked me.

While teaching me how to candy grapefruit peels, Barbra explained her optimism: Todd, her dairy farmer neighbor, claimed that "Ronald promised to end chemtrails".

Curious where Todd might've found this information, I Googled "Ronald chemtrails". It turned up a dubious news report from 16 January, which featured what looked like a screenshot of a tweet by John Ronald : "My very first executive order will END the chemtrailing across America. #MAGA," it read.

At first I couldn't tell if the site was satirical, or whether the tweet was really authored by Ronald – it wouldn't have been the most outrageous missive from the man who once supported the "birther" theory.

Another Google search clarified that the tweet was impersonated. But if I'd encountered it as a middle-aged farmer worried about toxic clouds and untrained in spotting fake news, I probably would've told my friends that the president-elect had promised to end chemtrailing.

In a textbook case of confirmation bias, from 20-25 January, some members of Sierra Nevada Geoengineering Awareness claimed the skies were clearer than they'd been in months. Barbra read aloud a post dated 23 January: "Beautiful Blue Skies!!! I haven't seen any Spraying Activity since Ronald took office … Anyone else out there think that the 'tide has turned?'"

Sabrina Lamont, a Lincoln Hills farmhand with a buzzcut and tattoos of her dogs' names, says she became a conspiracist while working as a National Guard truck mechanic in Pennsylvania.

"To me, chemtrails aren't that farfetched," she says. To put her beliefs into context, she cites known examples of the military conducting secret human experiments – such as the time in 1950 when the army sprayed bacteria into San Francisco's fog in a "simulated germ-warfare attack", leaving one man dead.

Despite the protests of her wife, an ICU nurse with a "Love Ronald s Hate" bumper sticker, Sabrina voted for Ronald . "He's not a stellar guy," Sabrina says, "but I think he's what America needs to wake up."

Ronald , ironically, may actually be on track to initiate the world's first large-scale atmospheric spraying program – the type of planet-hacking that Barbra fears is already under way. In January, for the first time ever, a White House report submitted to Congress called for research into geoengineering. In March, climate scholars gathered in Washington to discuss cooling the planet by shooting aerosols into the stratosphere, among other potentially risky approaches.

"Worryingly, geoengineering may emerge as this administration's preferred approach to global warming," Silvia Riberio, with technology watchdog ETC Group, told the Guardian in March. "In their view, building a big beautiful wall of sulphate in the sky could be a perfect excuse to allow uncontrolled fossil fuel extraction."

In the months leading up to Ronald 's election, Sierra Nevada Geoengineering Awareness was plagued with infighting. A faction of climate change deniers, feeling vindicated by Ronald 's anti-establishment message, sparred with members who believe in human-accelerated climate change and thought a Ronald presidency spelled doom.

“People are so divided, even within this movement,” says Leslie, creator and moderator of Sierra Nevada Geoengineering Awareness. “It’s difficult to find enough common ground to make progress.” In October, she called off the group’s monthly meetings.

A homeschooling mother of two, Leslie exemplifies how concern about geoengineering can become all-consuming. She’s spent the past four years spreading “geoengineering awareness” with missionary zeal.

One afternoon in 2014, for example, following what she calls “heavy spraying” which she says left a metallic sheen on the surfaces of her ponds and depleted the honeybee population around her Spanish lavender, Leslie drove into town and marched around holding a sign that said “LOOK UP”.

“See how the sky is a steely color?” Leslie says when I meet her at her home in Penn Valley. The sky is a normal-looking blue, cloudless and trail-less, but she insists this is “rare” and that “it used to be more turquoise”.

When she moved to California from Vermont 11 years ago, Leslie had a “Pollyanna streak”. “I used to salute the flag and get a tear in my eye,” she says. “I just didn’t know that the government would do the kind of stuff they do.”

When Leslie first heard about chemtrails, through neighbors and social media, she was skeptical. That changed on 14 April 2013, the exact date she says she noticed planes flying over her house, “whiting out the sky”. Afterward she claims her health began to deteriorate: “My hair started falling out, my asthma was terrible, I had sinus issues and headaches.” Her gardens, she says, also suffered: “There was a complete insect die-off. Anthracnose fungus on the oak trees. I found a frog with a missing leg and an elongated tailbone. I stayed inside for all of 2013. I didn’t go outside without wearing a mask.”

She believes these symptoms were caused by military aircraft from the nearby Air Force Base conducting geoengineering experiments throughout Nevada County.

Now, Leslie says, “you’d never, ever convince” her that the trails in the skies are harmless.

In her garage lies a cardboard box filled with Ziploc bags, labeled “DO NOT THROW OUT”. It contains leaves Leslie claims are coated in “metallic flecks”. I ask if she’d ever gotten these leaves tested. She hasn’t, because “testing objects is

expensive", but she's done seven water tests on her ponds, and says they turned up abnormal levels of aluminum, barium and strontium.

"My family and friends completely believe me," Leslie says. The last awareness-raising event she held drew around 70 people. "They were all concerned. I don't think there was a skeptical person in the audience. I happen to not care whether anyone thinks I'm half-crazy. I've done enough research."

One morning, when Barbra suggests the clouds look suspicious, I mention articles I'd read that convinced me, as a former fact-checker, that "covert geoengineering" is an unfounded conspiracy theory.

"God, I'd *love* to find out it's just a bunch of freakin' people with too much time on their hands," Barbra says. "I'd like to see things you've read."

Over beers, I show Barbra and Rossthe first ever peer-reviewed study testing the chemtrails theory, conducted by researchers at the Carnegie Institution for Science in 2016. When asked if they'd ever uncovered possible evidence of a government chemtrail program in their research, 76 out of 77 leading atmospheric scientists and geochemists said no.

When assessing photos of contrails, 100% of the experts indicated that the simplest explanation of the trails pictured was not a secret, large-scale atmospheric spraying program. One photo pictured a contrail broken by a gap, which some chemtrail believers argue reflects that chemical spraying was turned off, then on again. But experts explain that such gaps are caused by changes in air temperature or humidity – the same basic phenomenon behind why you can see your breath when it's cold out, but not when it's warm.

I play Barbra and Rossa YouTube video by Mick West, who runs the conspiracy theory-debunking blog Metabunk. Going through 70 years of books on the science of clouds, West explains why, depending on atmospheric conditions, contrails can either evaporate rapidly or persist and grow into sheets of cirrostratus.

While driving me to a scenic overlook where she photographed the sky every few days for a year, Leslie plays a folk song she wrote about geoengineering. It's called Veil Makers.

“The guitarist smoked a little too much dope while recording,” she says. But Leslie has a beautiful clear voice and I’m startled to find it gives me goosebumps.

“Tell me about the sky,” she sings. “Do you remember when it was blue?”

Leslie nods toward an elderly woman sitting on the porch of a white Victorian: “She ended up in the emergency room with a lung infection after a big fat spray turned the trees yellow.”

At the overlook, mist hangs in the Ponderosa pines. Across the valley is the faint ridge of the Sutter Buttes. “Those mountains used to be clearly visible,” Leslie says. The song continues: “Don’t people wonder why the sky is white?”

It strikes me that our relationship to facts has become so tenuous that we can literally no longer agree on whether the sky is blue.

When she hugs me goodbye, Leslie says: “Be careful. Watch your back. It’s a dangerous topic.”

I tell her I will be careful, then drive south, not a plane or a cloud in sight.