Since 1984, Paul Muller and his wife Dru Rivers have been stewards of Full Belly Farm, 400 acres in the Capay Valley of north central California. They provide a model of farming that embraces a full ecology of farm life: insuring year-round employment for farm workers; diversifying the kinds of products the farm generates; and maintaining practices in line with the newest thinking about sustainability. Paul’s experiences range from growing up on a farm, to learning from the emerging organic movement in the 1980s, to serving on the Working Group of the California Agricultural Vision. Dru was founder and director of the Ecological Farming Association. Their vision goes deep and wide. All of us – urban dwellers and rural farmers – can learn from Paul’s ruminations on the love and science of organic farming, creating a “happier and healthier” way of life.
Regenerative Philosophies for Regenerative Farming

If you go deep enough, you’ll find different philosophies that have sustained me in this work. One philosophy comes from having attended a parochial school, which may have given me the notion that we have a spiritual presence on this planet, something deeper and beyond ourselves that connects us to all things.

Another belief came from my parents who were farmers. My dad was from a relatively poor family of farmers in Switzerland. He grew up taking cows into the Alps, which has a kind of romance, but he found it pretty lonely, too. My mother grew up on a small dairy farm milking cows and doing farm work. My parents handed down a philosophy about frugality, hard work, perseverance, but also having a good attitude about your work, enjoying it rather than grousing about it.

I grew up on a small, well-loved dairy farm of 25 acres in San Jose. We bottled all the milk there, and people drove in to get it. School kids would come and learn about the source of their milk and the wonder of cows. San Jose is now near the heart of Silicon Valley. When the urban area started to grow around us, they didn’t want cows in the city. The City of San Jose condemned part of the land for a school and made us sell the herd, ending the dairy. That experience made me realize that agriculture wasn’t – and still isn’t – as much respected as it should be. Farming is crucial for an integrated and healthy society. We need to know how to integrate the urban and rural worlds, valuing the independence and self-reliance of many who choose to farm. If you’re an urban eater, you have to know something about how food is produced. My early thinking was shaped by the island-like nature of our small farm in a growing urban area, living a cultural conflict of two worlds built on very different values.

Growing up in the ‘50s and ‘60s, I saw how hard it was for farmers. A lot of my parents’ friends that I grew up around were immigrants who came to this country to establish farms and who saw opportunity in California agriculture. They were creative people who believed that they could succeed through hard work and focus. Generally, they were successful farmers. Yet the economics of agriculture were very difficult. During the years from the 1950’s through the 1980’s thousands of farm families were losing their land every week in this country. It’s an unappreciated, misrepresented, and not easily understood tragedy. People who loved where they lived and were dedicated to their lands were overwhelmed by a paradigm in which they couldn’t make money. So they couldn’t stay on farms they built or that were handed down to them. They had the skills and the knowledge to run the farms, but the market simply didn’t support the work. So watching that transition and its toll on those hard working immigrants also informed my thoughts about farming. As amazing as Silicon Valley is, it was built on wonderfully
fertile farmland with one of the best climates in the state, yet we scarcely acknowledge what originated there.

Another part of my philosophy was related to the Buddhist notion of the Eight-Fold Path, and in particular Right Livelihood. I did some traveling and worked on different farms in my youth. I also did wilderness work with Outward Bound for a while. But I came back to the idea that there are few pursuits in life more honorable than producing food. Farming is an essential and fundamental industry, and at its roots represents everything I felt I should do with my time.

Then came the idea, “I can grow food that is not only healthy, but also solves some of the conundrums of our failing farm economy, regenerating the potentials in agriculture.” As a society, we now think about all of the systems that support sustainability while dealing with much larger issues like climate change. Wendell Berry says, “Solve for pattern.” The new-pattern thinking requires taking a closer look at how we produce our food. The emerging sustainable pattern probably won’t be the corn-soybean commodity system around which this country built so much agricultural infrastructure.

**Growing into the Organic Idea**

I came into organic as a young farmer. I was observing the paradigm of industrial, monocultural agriculture as it was taking control of vast fields of America and turning them into just a few commodities. How dangerous was that ecologically? How dangerous were the products to farmers and their families, such as the indications of high cancer rates in farm communities? And how dangerous was it to farm communities forced to live by the idea that you should always produce more for less? It’s a historically repeated cycle in farming, a kind of destructive abundance, where success is one’s undoing. So much was being produced that it created a depression in prices, which depopulated rural communities over the long run.
The movement arose – I have to say! – organically in different parts of the country at the same time, with people having the same realization that we need to redesign agriculture. Some of that movement was directed in angry ways at the problems created by the dominant agricultural practices. I saw that I needed to farm differently because that paradigm was creating collateral damage in a system where people poured their hearts into their farms, yet couldn’t make a living from their work.

I’m not against conventional agriculture per se. I deeply admire farmers. Many weather all these difficulties and still produce. That takes genius and adaptability, a willingness to change and try new things. In many ways, conventional methods work. Herbicides generally kill weeds. Applying nitrogen fertilizers makes the plants green and boosts yields. But both of those products can do long term damage to soil and can migrate deep into the aquifers or rivers where we get our drinking water.

So the tools farmers were handed may have solved some problems, but they didn’t ask the essential ecological questions:

How do we produce abundant and healthy crops without subjecting the environment to poisons that may have unintended consequences? How do we farm so that we’re regenerating the soil’s capacity to produce while making good crops?
The organic movement began to address all that, with support from organizations such as the Soil Association.¹ At the same time, a larger environmental awakening was occurring. People today have far more knowledge than we did in the ‘50s and ‘60s. Now, we understand that things are related to one another. We teach our children about water cycles, networks, or forest ecology. They learn that you simply can’t put dangerous chemicals into the ground, air, or water because everything is connected in some way to a larger whole.

That idea was still new in the ‘50s and early ‘60s. I remember a high school conversation about Silent Spring by Rachel Carson, a seminal work, and how farmers I knew reacted to it.² They had a hard time making a living at farming, relying on these tools handed to them by our universities as the tools of a “progressive farmer.” The emerging environmental movement criticized those tools, urging they be banned as unsafe for them and the environment. That conflict created a cultural bind that exists to this day, such that farmers, who should be the first environmentalists, are at war with people who should be their allies in the fight to protect the resources that sustain all of us. Organic farmers sought to take a step back and think about the indigenous resources on a farm, looking for patterns that allowed the ecological system to provide things that conventional farmers were purchasing.

¹ Formed in 1946 by scientists, farmers, and nutritionists in the United Kingdom, the Soil Association emphasized the connections between farming practices and the health of plants, animals, humans, and the environment.
² Carson’s Silent Spring (1962) examined various uses of pesticides and their impacts on human, farm and wildlife.
Farming in California

Few Mediterranean climates exist like California has, making it a special place with amazing potential. I look at California from an immigrant perspective, where poor immigrants like my father arrived and found abundant and pure water, a benign climate, and cheap, high quality land with few regulations and other constraints found in Europe. My father was one of ten kids. Available land was disappearing in Europe because, as kids grew up, families had to divide the land over and over. So Italians, like the Gallos or Mondavis, came to the Napa Valley and made wine here. Other Europeans went to the Central Valley. There they leveled, planted, grazed, and built infrastructure to move water from North to South.

Again, there was a genius in all of that, making the land productive. Yet that hunger lent itself to infusions of capital where growth and accumulation were their own goals, making farms bigger and bigger. Others had an ethic that said, “Look, we’re better off having a small but healthy farm economy, with healthy farm communities.” That dream has been all but lost in the race for more production and the lack of attention to the consequences of policies demanding cheap food.

The result was a concentration of ownership, so that instead of fifteen families farming 2000 acres, one or two families were farming it. Not everybody could buy the next piece of big equipment or buy the new hybrid seed, so some farmers had two years of economic advantage over their neighbor who’s still using the old seed. That contributed to rural California communities being decimated in the ‘60s, ‘70s, and ‘80s. Stores got boarded up. A lot of rural Californians had and still have real problems, both economically and socially, with some of the highest national rates of hunger and poverty found in California’s Great Central Valley, despite being one of the world’s most prosperous farming regions.
Building Living Soil

In the 1960s the University of California was researching chemical inputs and told farmers things like, “We’re developing this variety of broccoli that grows well if you give it this much nitrogen, phosphorus, and potassium.” They researched ways to make products soluble or granular, and which herbicides would work where to support broccoli production systems. They developed insecticides and fungicides or new weed killers to deal with the problems that might arise for that plant. They developed the tools that fit together in a “system.” Farming became a skill matched with a formula of inputs.

In defense of that kind of research, it was a very productive system that helped lower costs and increase yields, but they missed thinking about the fundamentals of soil ecology. Most conventional farmers would insist, “We’re doing what’s necessary to be progressive and stay in business. We’re not damaging the soil!” They negate costs associated with soil ecology as part of their economic equation.

We’re beginning to understand what soil is all about. Fundamental to the movement of organic agriculture is the idea that soils are the basis of it all, the heart of growing healthy plants and people. The productive potential of soil is the resource we must regenerate year after year. Robert Rodale from Pennsylvania³ was a big part of beginning to think about that in new ways. If you build soil health, you have healthier plants that will resist diseases. Healthier plants mean fewer insecticides or fumigants.

³ Robert Rodale inspired the organic farming movement with his magazine Organic Gardening in the 1950s and ’60s. He also wrote Sane Living in a Mad World: A Guide to the Organic Way of Life (Rodale Press, 1972).
Also, healthy soils store more carbon, release a greater range of nutrients to the plant, and hold water more efficiently. Managing your water and fertility correctly by feeding the soil will allow your soil to release its potential aerobically, not anaerobically. To do those things as a cultural practice, allowing the system to express itself, will yield different outcomes than trying to dominate those fundamental biological systems.

Organic farmers for years have been saying, “Feed your soil!” That’s the basis of all life that exists on this planet. Perhaps it stems from the original organic insight which was to respect life in all of its forms and build a healthier system.

More and more evidence supports this organic idea of healthy soils as fundamental to system health. In the Central Valley, farmers are adding more carbon through composts and organic material because they realize that their soils are becoming depleted. The Natural Resource and Conservation Service estimates that soil depletion throughout the country will become the greatest factor in limiting future yields.\(^4\) Meanwhile, the United Nations is celebrating soil, understanding that healthy soils are critical to feeding nine billion people on the planet. We’re finding new ways to measure soil microlife, carbon, and

\(^4\) More information can be found at [https://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/](https://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/).
permeability with innovative tools coming out of Cornell, Texas, and other places. Exciting new science is measuring nutrient density, and examining the complexity of the human gut and the role of whole foods in our body’s health. We’re still evolving, just beginning to understand how soil health is at the heart of both how farms succeed in the long run and the vitality of the foods we eat.

The Mullers’ History in Capay Valley
In the mid-1980s, we were not living in an environment where I wanted to raise kids. When I first met Dru, I was renting land where I had a garden by Woodland in the Central Valley. In the winter time, some farmers would spray paraquat on weeds to burn them back and create weedless fields, but the dense valley fog would carry the paraquat to our land, making little yellow holes in crop leaves, so our broccoli and other garden vegetables ended up with clear evidence of pesticide drift. It was a warning sign to think carefully about where we settled.

By 1984, Dru and I were going to have our first child, and we found another problem. We had our well water tested, and it was really high in nitrates. Nitrates are generally found in shallow valley wells as a result of nitrogen fertilizer applications that travel down through the soil. High nitrate water is not very good for babies, so we decided to move before we had our baby.

We came up into the Capay Valley where there is much “slower” agriculture. It hadn’t been very intensively farmed and didn’t have a history of a lot of chemical use. Farmers here were getting by on smaller acreage. This area may be unique because of its small holdings. The undulating topography doesn’t allow for knocking down all the fences and consolidating farming. Dru and I put together a partnership with Judith Redmond and Raoul Adamchak, and we found an affordable parcel, whereas buying land in the Central Valley is increasingly out of reach for beginning farmers.
This property, which is now Full Belly Farm, hadn’t been farmed for years. We bought it from a contractor from Danville who just came up here to drink and shoot rattlesnakes! The orchards weren’t being taken care of. In a way, the neglect was a virtue. The ground hadn’t been farmed too hard, and the soil was very good. Over time, we’ve improved the soil, so now it’s very fertile and productive.

One of my pieces of advice to beginning farmers looking for land is to find the best soil you can and make sure the water is good, that you like to drink the water. Also, make sure you know your neighbors before you buy a piece of land because it’s critical who you’re talking to next door. If that person doesn’t want you there, your life will be miserable. If you find people next door who appreciate and enjoy what you’re doing and support you, your pathway will be easier.

**Early Teachers and Lessons**

Some folks in the upper Capay Valley were already doing organics, like John and Gretchen Ceteras on Blue Heron Farm, and George Stevens and his wife, Sarah Atkinson, who had a farm up in Rumsey. They began to do farmers markets and direct sales to stores and restaurants, which we saw made a lot of sense. A good friend, Annie Main of Good Humus Produce, was a beginning farmer with her husband, Jeff Main. As a student at UC Davis, she saw the need for a better market, so Annie just went out and helped start what is now one of best farmers markets in the country, the Davis Farmers Market. Another important neighbor was Kathleen Barsotti, who was a researcher and farmer. Her sons now have one of the biggest Community Supported Agriculture programs in the country.

In the mid ‘80s, the movement still felt pretty small, but there were icons at that time, people actively trying to figure out organics. I met the Lundbergs up north, brothers experimenting with organic rice and committed to making it work. They were doing things that seemed crazy, like injecting water with their seed to stimulate germination. They were hauling a big hose around the fields attached to their planter to avoid the standard practice of flooding fields to germinate the rice seeds. This helped them avoid the
weed problems created by flooded fields and allowed them to avoid herbicides typically used to deal with those weeds. We saw many innovators driven to new solutions and new farming experiments asking different questions, like “What can I do to reduce the need for weed killers?”

Amigo Bob Cantisano from Grass Valley was like the Kokopelli of this movement, going from one place to another to gather and share new ideas. He saw what one farmer was doing and talked about it. “Hey, this is what I saw on another farm.” He pulled information together and helped folks like me begin to rethink how one might farm. Since I grew up on a farm, my head was full of the way it’s supposed to be done. I had to untangle that and think about new ways to farm, like building healthier root systems in plants so they’re harvesting more nutrients, or the roles of different mycorrhizal fungi. That was all new language. Learning organic farming was like going back to school where the strategies explored started from a very different set of questions.

Amigo was an incredibly capable facilitator, educator, and communicator. In fact, Amigo and a couple of other farmers organized the first organic farmer get-together in the Winters area. He had about fifteen farmers there, including young farmers like me, listening, asking questions. Amigo talked about how you get good compost and why we should use compost. There was a practical application in what he said, with an evolving science behind it, too. His ideas were part of, not “cosmology” exactly, but a new pattern for redesigning how we think, behave, and grow.
So I took those ideas back and grew my first carrots and potatoes. People said, “You don’t grow those crops in this area! Carrots are grown down in Southern California.” Or “there’s a window for when that crop grows well. You don’t want to grow it past this time.” I still had so much to discover. Little by little, Dru and I learned. Each crop invites a relationship, getting to know what a particular crop likes, learning its seasonal constraints or propensity for certain insect issues. These relationships took years to evolve, growing into the knowledge that we’ve developed over many years on this farm.

**Using Resources Indigenous to the Farm**

We brought that knowledge that Amigo provided into a larger discussion among farmers about how we do things, what we’re seeing. For example, the compost we were getting was from turkey manure, which alone did not make a balanced compost. We had to rethink what makes good compost for this particular soil. What’s the balance of different fungal, bacterial, and microbial populations in the soil? How much oxygen or CO2 is there? Is the nitrogen stable? What are good locally derived amendments?
Over the past thirty years, we’re still answering the compost question. Our goal is to provide our soil with enough energy to replace the nutrients that we’ve drawn out to grow a crop.

We now understand how an amendment can be produced anywhere, in Nebraska or Kenya or India. You take your organic waste, put it in a pile, and inoculate it with the right microbial population. That’s akin to putting yeast into a bunch of flour and water to get a dough that rises and makes a particular bread. Similarly, in agriculture, you’re putting the right population of microbes into this pile of carbon to have it digested. That amendment then feeds your soil and all the life in your soil.

These days, if you want to be more self-reliant and have a better bottom line as a farm, you can do a couple of things. You can expand your knowledge by looking for answers that “solve for pattern,” and you can employ more resources indigenous to your farm. For example, we’re living in an atmosphere that’s about 78% nitrogen. Nitrogen has a nifty way of going from the air into the soil through legumes, like beans, alfalfa, and peas. Those plants work with soil microbes, rhizobium bacteria, in a unique relationship, and they pull the nitrogen down to the roots, translocating it to the soil where those bacteria sequester it. It’s a handy relationship we don’t employ nearly often enough in agriculture. It was organic farmers who remembered this relationship practiced by farmers over time and who began to say, “Look, we can harvest more nitrogen by incorporating more legumes into our rotations, and the legumes also
add organic matter to the soil when incorporated into it.” It’s another harvest on the farm that happens when a farm diversifies and looks for solutions that don’t require an off-farm purchase.

The same with carbon. You take the energy of the sun and translocate or accumulate that energy in plant matter through photosynthesis. Right away, organic farmers understood that cover crops protect the soil in a very simple way. You begin to accumulate more carbon and feed your soil by incorporating that material, allowing it to die and be digested by your soil, thus feeding soil microlife. Sequestering atmospheric carbon with growing plants creates a harvest of crops that can feed us or feed livestock. Another way to store carbon is when cows eat grass, and the carbon morphs into body mass and muscle.

Another indigenous resource is insect ecology. We have a myriad of workers on this farm that need to be fed with pollen and nectar. Using farm design changes, we have places for them to forage where they can benefit us and help prevent problems. At certain times, the lady bugs in our fields need pollen and nectar to survive, and at other times they need aphids. If we can keep them here, they’ll help us as part of our pest control strategy. Lacewings, some big eyed bugs, and other insects will also work for us if we provide them a place that is hospitable with a menu to support them.
This strategy allows us to become more self-reliant and lower our total cost by maximizing what this system can produce. Our output is not always measured in pounds of grain or boxes of broccoli or bunches of carrots, but in other ways where these environmental services are part of a whole. It’s a much bigger thought about what a farm can be. Most conventional farmers are paid only for the bushels of corn or soybeans they produce. They’re not paid for the environmental potential of making a whole, resilient, healthy ecological system that supports a wide array of life.

Organic farmers and consumers early on wanted to support practices that take care of a bigger whole. Organic food gets criticized for being expensive, but people don’t get the fact that if an organic farm is run well, consumers are protecting a much larger ecological system. They’re paying for environmental work, water stewardship, soil regeneration, and community regeneration.

Growing Beautiful, Too

Every farmer I know, conventional or organic, wants to grow things that are beautiful. Look at the incredibly striking arrays of vegetables in our supermarkets. So perfect! Anything that’s not quite perfect is pitched out. The market standard is food that’s more vibrant looking and has a longer shelf-life. When we were starting out, we found we had to meet or even exceed that standard. Was that hard at first? Yeah! But we were evolving in our knowledge.
When San Francisco restaurants were looking for baby lettuce, we had to figure out how to grow it. We started packing 24 heads to a box. It was beautiful because lettuce can have so many different textures and colors. That crop also helped capitalize our farm because conventional farmers weren’t growing it, but we could do it really well. So in the late ‘80s and early ‘90s, we began to cement these relationships between us and a marketplace that was looking for something beautiful and different.

In the process, I borrowed a lot of actual tools not just from my family but from other sources of conventional agriculture – cultivation and tillage tools, tractors – because we were growing in size, and the scale meant leaving behind a lot of smaller scale tools. At one time, we could buy them very cheaply because other farms were getting even bigger and going faster and needed heavier equipment. We’re the beneficiaries of an agriculture that was morphing, and we were able to pick the scraps off the heap and make those tools work for us.

We also had the stubbornness to succeed. Once you started seeing that you could grow these crops, and you tasted their flavors, you’re validating yourself in your experiments. At the same time, the farm revealed other benefits of creating a healthy soil and diverse ecology. “Huh! The potato field is full of ladybugs! I didn’t bring them here, but they came because I created the right environment for them.”
A lot of my knowledge was founded upon and then modified from what farmers have known for many, many years. Though farmers take pride in being self-reliant, you always have to honor your ancestors in all of this.

**Fields of Dreams – and Weeds**

I could talk forever about what the eye of a farmer sees. Unfortunately, for many conventional farmers, good farming means uniformity. The exactness to it is beautiful to them, an expression of their agricultural skills at its highest level. In contrast, early organic farmers had weedy fields. Those fields on the margin of a larger-scale agriculture were the ones that were available for beginning organic farmers, and they were a mess to clean up. We didn’t always have a lot of cultivation tools or know how to time seeding correctly. Early on, we had to abandon some fields because they were swimming in weeds.

If you compare organic to conventional fields now, though, you might have a hard time seeing a difference. But the soil amendments, the basis of what farmers put on their fields, are very different. And if you work those fields, you see the difference. A big organic grower told me a story about hiring a conventional farmer to bring his chisel – it cuts soil deep – to work on his field because he didn’t have time to do it himself. This conventional grower later told my friend that he couldn’t believe how easily his chisel went through the soil. “I could go deeper and three gears faster! My tractor efficiency was so much greater. It’s what you do to the soil, isn’t it?” Even though he could see the obvious differences – the soil was easier to work and required less horsepower – he still didn’t want to transfer to another system. We have to help farmers make that transition so they can begin to experiment, too. If their margins are too tight, though, they won’t do it.
Meanwhile, Back in the Movement

By the early 1980s, we held an Ecofarm Conference at different places along the coast, bringing together farm entrepreneurs and experimenters to expand our knowledge. We’d have workshops and listen to other farmers, collaborating to analyze everything and pull together the knowledge building a new food and farm system. We talked about improving heirloom tomatoes, analyzing and amending soil, or complex issues relating to farm labor, exploring models where farm labor is dealt with more fairly. It was very open, which was healthy, and it still has that character today.

The movement was clearly successful and beginning to expand. Folks like Mark Squire at Good Earth Grocery or Mark Mulcahey at Good Nature Grocery were creating more places to sell organic products. Veritable Vegetable was a wholesaler willing to pick up your produce. Alice Waters of Chez Panisse used to send her crew by our farm, and sometimes she’d come herself to pick up our vegetables. She represented the movement to consumers who wanted to eat organic foods.

I can’t overstate how important it was that we had a consumer base saying, “We want to source our food from farmers who care about their processes of production.” That consumer movement allowed organic farmers to expand. It’s great to have a philosophy about saving soil and ecology and everything, but it has to work economically, too. Michael Pollan talks about the three-legged stool of environmentally sound agriculture: the legs are the consumer, the grower, and the distributor. Another version of the three legs are being environmentally sound, socially just, and economically viable. All those things have to fit together.

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5 Michael Pollan is an author and educator who focuses on the topic of the politics of the industrial food chain. He teaches at UC Berkeley in the School of Journalism.
We’d get together to dance, share stories, and watch our kids grow up. It became a social movement, which is critical. If organic agriculture is really going to succeed, its virtue has to be that it’s happier and healthier. We realized early on that we need to get together and dance together. That formed lifelong friendships and added to the idea that perhaps we can contribute to an agriculture that regenerates the human spirit, too – if that’s not too presumptuous.

Stewardship of the Land

Nowadays, land is really expensive, and young farmers can’t buy land. People who made a lot of money in the cities now want to own a piece of the country, so they buy land out here, leading to land prices being incredibly inflated over what you can actually earn on that land as farmers. We have hedge funds or insurance companies or a pension fund for state workers buying huge tracts of land in the
Central Valley and planting almonds to make big money, because China and India want our almonds. Suddenly, everybody is a farmer! To me, it’s another manifestation of losing track of how important it is to have people who actually live on a place, people who are true stewards of a bigger ecology by being intimate with that place. In fact, to me, that’s a prerequisite for being a good land steward.

There are lots of models for how to own land and be stewards of it. One of the strengths of Full Belly Farm is that early on we became a partnership. When this land became available, we created a partnership with four individuals. Each one brought a different set of skills to this endeavor. One partner, Judith Redmond, organizes our office and our accounts, does some sales, and goes to the farmers market. My wife Dru also does sales and brings livestock into the farm as an important piece of the whole nutrient cycle and the life we want to foster here. She does a great job with interns, too. She worked for a while as the director of the Ecological Farming Association right out of our house here. Andrew Brait is another partner now. He plans all of our small seeded crops. He’s skilled in general farming, so he’s a real asset. I do lots of different things on the farm -- keeping the physical processes going, doing some of the soils work and planting certain crops. All of those complimentary skills allow us to enact the idea that the whole is greater than the sum of the parts.
Years of Dramatic Movement Changes

A few years after we got going, the notion of organizing better began to circulate. I served on the board of the California Certified Organic Farmers organization (CCOF) for a while in the ‘80s, and we began to put all the pieces together, including marketing. At the time consumers were asking, “What is organic?” So we questioned, “How do we define it? How do we improve on it? How can we produce better quality, like dealing with spots from codling moths in apples?” All these ideas were coming in, everybody taking a piece, experimenting, and then coming back with results.

By 1989 the Organic Foods Act was being developed, which would govern what defined organic foods. But instead of being put into the Department of Food and Agriculture, it was put in the Department of Health in California, as part of the Health and Safety Code. The Department of Food and Agriculture was the agency responsible for regulating pesticide use in California fields, so they were uneasy with an organic system that questioned those tools. At the same time, the Department of Health was looking at the implications of pesticide use and nitrate exposure through a different lens. Finally, in 1990 Assemblyman Sam Farr of Monterey was able to usher in the California Organic Foods Act through the California Department of Health.

Then we confronted other questions, like about soil amendments. “This is an organic material, but is it safe to use in organic agriculture?” The basic rule was that you couldn’t use synthetically compounded materials. Arsenic is not synthetically compounded, but can you use arsenic to kill bugs? For many years, farmers did. An old farmer told me about dusting his tomato plants with arsenic for years into the ‘60s. They were using very toxic tools.

So all of these pieces and more had to be defined. CCOF became the organizing medium with local chapters. All the early adapters went to these meetings to talk about what they were doing and learning.
We were building an organization to help market and promote organics, to help ask for research funds from the university, and to find ways to protect the organic brands.

Meanwhile, this same kind of organizing was happening across the country in various places, such as in Oregon or at the Rodale Institute. There was the rise of the New England Organic Farmers Association about the same time. So we were beginning to get some momentum. It was a movement on the roll! But some seminal pieces happened here in California with the Organic Food Act and because organic was so diverse and had so much happening here. We had an intelligent and progressive consuming public, so organic took off here at great speed.

**Moving from the Fringe to the Mainstream**

Over time we were no longer a fringe movement. I’m not sure I’m in the mainstream yet, though! I’m still a bit of a fringe thinker.

Outside of our little movement, things were happening. In the early ‘80s, one of the worst farm depressions ever hit this country, and farmers were still going broke through the late ‘80s. During this period many Midwestern farmers lost their farms. Some committed suicide. Until then, they had bought into the concept that the world was hungry, and we can produce as much as we want to. Everybody knocked down fences and produced as much as they could. Consequently, prices bottomed out.

But in that process, farmers started asking different questions. Some decided, “I’ll try organic.” Then the new system became the teacher. You realize, “If I’m going organic, I can’t use all this stuff, so what do I do?” You try new things, look for new knowledge. Pretty soon, you’re seeing things in your soil you didn’t notice before because you’re paying attention now.

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6 The Rodale Institute was founded in 1947 by J.I. Rodale, the father of Robert Rodale. For more information, see the link [http://rodaleinstitute.org/](http://rodaleinstitute.org/)
Another big change for organic came from the demand side. Consumers began to ask for organic because of new awareness about toxics, like problems with water high in nitrates in the Central Valley where some water is undrinkable. Then there’s the air. At certain times of the year in the Central Valley, people wear masks because of cotton defoliation, and that leaves pesticides in the food, too. The mouth of the Mississippi is a dead zone of 200 square miles or more, much of which is also linked to nitrate leaching from fields and confinement-fed farm operations further north. Everywhere it’s real that soils are becoming depleted, and that means the quality of food is not as good as it once was. Nowadays I may have to eat two or three non-organic apples in order to get the nutritional value of one apple from the 1940s.

So when those problems with pesticides and pollution arose, many consumers turned to other systems. They wanted to feel healthier in lots of ways, including getting healthy food from small scale farms, from farmers they could trust and support. Maybe they had the same beliefs about self-reliance and independence that Thomas Jefferson had, that a democracy needs a healthy rural population of independent thinkers. They also wanted their kids eating healthy. When you hear about kids having high levels of organophosphates and pesticides in their urine, you get them on an organic diet!

The growth in consumer demand and the capacity of organic farmers to produce and deliver has been an evolutionary process. The conventional food system is very efficient and has cheap and well-established growing, delivery, and storage practices with a lot of science built into it. To supplant the conventional system, we have to utilize those practices and the science, too. How do you pick something and keep it fresh so it can travel to a market and be presented fresh? What are the right temperatures to do that? How do you pack it well? How do you use water to hold and store it? All these different farms were learning these methods and developing the infrastructure to meet the demand for their food, to deliver it to a shelf where the consumer can taste something that’s fresh and flavorful.

Simultaneous with those changes, organic became the higher standard, so grocery businesses were competing to be able to say, “We now have organic food.” That competition helped put more organics
on the shelves as a way for those businesses to stay important in the marketplace. So we were helped by a lot of factors.

**Very Cool Marketing Strategies**

About 1995 we started our Community-Supported Agriculture (CSA) project, an important avenue of our early marketing. The customers get a box of produce from us every week or two for about $17 box. We put in eight to ten different items, all picked fresh the day before, and deliver it to central pick-up places. Thinking about the year ahead, we plant for diversity, planning to fill a box with seasonal products that reflect what we can grow in this region at that time.

It was an incredible idea when it was developed. Now we have about 1200 active families in our CSA who pay ahead for that box of produce. So instead of our being, in effect, the bank to a wholesaler where we give them product, and they give us money thirty days later, our customers have invested in the farm by investing in their weekly boxes. That allows us to finance the ongoing operation. Their money helps us plant and helps us pay our workers who do the harvesting.

Just like we’ve diversified our cropping patterns, soil systems, and insect ecology, we also seek to diversify marketing. Selling to the CSA comprises about 15% or so of what we grow. Then we market another 15% at three farmers markets a week. We sell about 30% directly to stores and a lot of wonderful restaurants. The rest we sell wholesale, which we do last, if we have extra crop.
One example of a very positive relationship with a buyer is ours with Sibella Kraus, a real force! We’ve known Sibella for many years. She organized a wonderful event in Oakland, A Taste of Summer, at the Oakland Museum for a couple of years. For that event, she began Farm-to-Fork, a field-to-table movement by which growers can know the restaurant people who are leading the way in using fresh ingredients. There we could talk about where and how certain things grow, and the unique varieties and flavors coming out of our fields. We could talk about great tasting broccoli and discuss their different uses, and celebrate turnips like they’ve never been celebrated before!

This larger notion of the local food movement, field-to-table, is now as powerful and important a movement as the organic movement is. Certainly, when you marry those two together, it becomes a fundamental re-energizing of the food system.

See more about the Farm-to-Fork movement at http://www.farmitofork.com/ and the Taste of Summer events also on that website: http://www.farmitofork.com/events/tasteofsummer/
**What’s Next, Beyond the Movement?**

Whatever brings people to growing organic and growing for sustainability is healthy. A lot of big companies now want to get on the organic bandwagon and produce organic food because the market is there. Is that good or bad? Hopefully the system will teach them that if you’re raising chickens organically, you can control diseases by modifying their diet with good ingredients. It’s better that people eat organic food, even if it’s from a mega farm, but it would be better still if those farms are living up to the letter and spirit of organic, building their soil and creating healthier environments for their plants and humans to live in.

The local food movement may be a bit of an antidote to the scaling up of organic. Consumers who support local growers realize that they’re supporting a local economy.

As to improving the organic standards, that’s happening, though not as a single movement. Farmers tend to be very individualistic. But the time is coming to say, “We have to include labor standards in this process.” That’s a social justice position, and now you can be “social justice certified.” Your livestock practices can be “humane certified.” So beyond organic can mean that we have higher standards for humane treatment of animals and humans on the farm. That’s all part of a larger conversation about the food system that we have. And that all takes time and paperwork and a lot of other things which can be difficult to pull off. The original organic rules about production were not built around the social reconstruction of rural America and economic and food justice. But we can get there.

Certainly, we are now aware that agriculture practiced well sequesters carbon, which can offset people driving vehicles and spilling carbon into the air. Methane, a very potent greenhouse gas, gets produced on farms from confinement-fed animals. Nitrous oxide is another potent greenhouse gas released from nitrogen fertilizers, ammonias, and other things farmers use to fertilize their fields. So where problems link directly back to agriculture, that is where we can reconstruct our actions around carbon. Like choosing no-till if possible so that you’re not volatilizing the carbon off every time you turn the soil over. But in my opinion, you shouldn’t make tillage completely evil either. In any case, beyond organic can mean that we are now aware of a “carbon budget” for a farm, and we can think about paying farmers for having a better carbon budget.

Beyond organic also includes new and different ideas that are important for evolving a better food system. That’s really the goal. You start realizing what the components are and how complex it is.
Salad that comes from California and gets sent to the East Coast has more calories in the packaging and trucking than it does in the food product! It makes no sense to travel so many miles to get to end users. How do we reduce the amount of energy that goes into every calorie of food that’s produced? How do we grow and harvest so that we’re regenerating the vitality of the place, whether it’s insect or soil life, or the human beings around that place?

We can’t be swayed by the notion that information, technology, and science are the sole avenues to feeding nine billion people. The fundamentals have to be working, like people harvesting more nitrogen from the air and feeding their crops with that; or livestock regenerating their feed by grazing practices that have them work the soil; or rain water going into the ground rather than flowing off it because we have plant matter that absorbs the water. We also have to pay attention to the larger ecology of birds and other resources that farms can steward, such as linking the prudent use of water to food production. How wonderful it would be for future generations to witness salmon running up the Sacramento River! Farmers sometimes put out the silly dichotomy that the water can either go to fish or to food. It can be both, but we have to allocate those resources well.

We have to be cautious about being swayed too much by alarmist notions that we won’t be able to feed this global population unless we adopt American style, large-scale agriculture worldwide. That is an overstated and self-serving fallacy. We farmers do squawk a lot as part of a bigger collective movement that’s thinking about how food is produced, and we hope that it catches on worldwide. If we don’t pay attention to these issues and build on the movement, I’m not sure we can handle global warming. Yet I
believe deeply in our potential to heal our earth. Good stewards can take care of the soil and manage resources in healthy ways.

I really love rural people and the farm spirit all over the world. Farmers make a crop every year, and have one shot at it, so they’ve got to get it right. What amazing character it takes, being self-reliant and hard-headed. But we have to decide that farmers do more than just grow food. I have faith that if you ask new questions, the answers will be really different, like, “How do we produce abundant crops and sequester more carbon to feed our soil?” Then comes the question relating to economics. “How do we pay for that?” Do we ask farmers to do that out of altruistic motives, or do we tell them, “Our job as a society is to get carbon out of the atmosphere. We’ll pay you for your work in achieving these levels of soil organic matter, if you can show progress here.” You see? It’s a much wider set of relationships that we have to think about.
Full Belly Grows Fully, with Dreams Realized

When you talk to agrarian elders, everyone says how hard it was. For us, too, it took a lot of years to get where we are now, years of trials and mistakes. Sometimes we sold to people who really wanted our product, and they formed a great market. Other years, those people would disappear. But when we started to have real success with our crops, our capacity expanded. Finally, the movement and the market were expanding together, which allowed us to see a level of profitability at the end of the year.

We also wanted to design the farm so the crew could work here year-round. As a result, they became invested in the farm. Right now, we have about eighty people who work on this 400-acre farm. That has created stability, and the ability of our crew to have stable lives, to be housed in a community where their kids can go to the same school for their whole education and get into college. Redesigning the farm for year-round work became part of our ultimate success. We didn’t have to go to the bank to borrow money, either. We created a farm with year-round cash flow and year-round employment.

There were a lot of pieces there that maybe started out at ideals and took us a while to get to the manifestation of that ideal in a real world context. We've now hit a point where all of those things that you put in place begin to work really well.

We wanted our own four kids involved here. They’re helping diversify the income stream of the farm, whether it’s with education or culinary projects, like catering, or incorporating livestock into the farm in
new ways, or doing flower arrangements and sales. Having my kids here is really wonderful. Kids born and raised on farms know a lot. They have good commonsense, and they’re problem solvers. We butt heads sometimes about which way to do something. If I can stand back and let them do it their way, I realize, “Wow! I didn’t see that possibility.” Could I have foreseen what we have here? No, because the kids add another dimension I’d never have been able to anticipate. They bring their own expression of smarts and genius. To me, those moments of discovery with our kids are my favorite.

I’d never have anticipated this farm looking like it does when we first moved here. I’m not sure I could have imagined what we have now because it’s been the creation of so many amazing people here who each added their part in building it. But I knew I wanted to help create new field designs, experiment with insect ecology, find insects that will move through our fields and protect us from insect attacks. How can we grow more flowers? How can we grow healthier layers of life, from the soil to the plants to the trees? We keep figuring it out, all together, creating a whole from each little part.

As we’re still trying to figure it out, it’s working. We’re producing great crops, and we have a vibrant farm that’s a really fun, creative, and interesting place to work. Our farmworkers take our food home and feed their kids. Full Belly Farm is touching a lot of lives, and that’s very gratifying.