



100% Natural



At Salamander Springs Farm, Susana Lein practices permaculture to the max

Susana Lein's journey that led to her reputation as one of the country's foremost permaculture practitioners in the U.S. began in the mid 1980's when she was growing disillusioned with her land planning and architecture career in Boston. "I no longer wanted to make my living designing office parks and condominium developments," she told me. Tired of "turning wooded green spaces into concrete jungles," she began participating in weekend events and workshops at the New Alchemy Institute on Cape Cod, "an amazing revolutionary place during that time, started by a true visionary, John Todd."

There she learned about a new ecological design system called "permaculture," which was making its way to the U.S. from Australia.

Wanting to learn to live more simply and in a proper relationship with the earth's resources, Susana left the U.S. in 1990 to continue her permaculture journey. She spent eight years living and working with Mayan farmers in remote mountain villages of Guatemala, and worked on various additional projects in other South and Central American countries. It became clear to her how our consumerist, throwaway society directly and negatively affects the lives of the people in poor countries

who provide our cheap goods. While with the Guatemalan-run non-profit Altertec, she taught and practiced *campesino* (peasant) permaculture, which aligned well with indigenous farming traditions.

"I learned as much as I taught—by incorporating and building on the knowledge and cultural traditions of the Mayan farmers I worked with. The core of my knowledge in corn seed selection came from those years in Guatemala, with the late Don Gavino Ca'al and other Mayan farmers, whose ancestors had developed corn itself from its parent teosinte."

Their methods were substantiated

“ There is no need for tilling or weeding at Salamander Springs Farm, as Susana practices 100% no-till permaculture.”

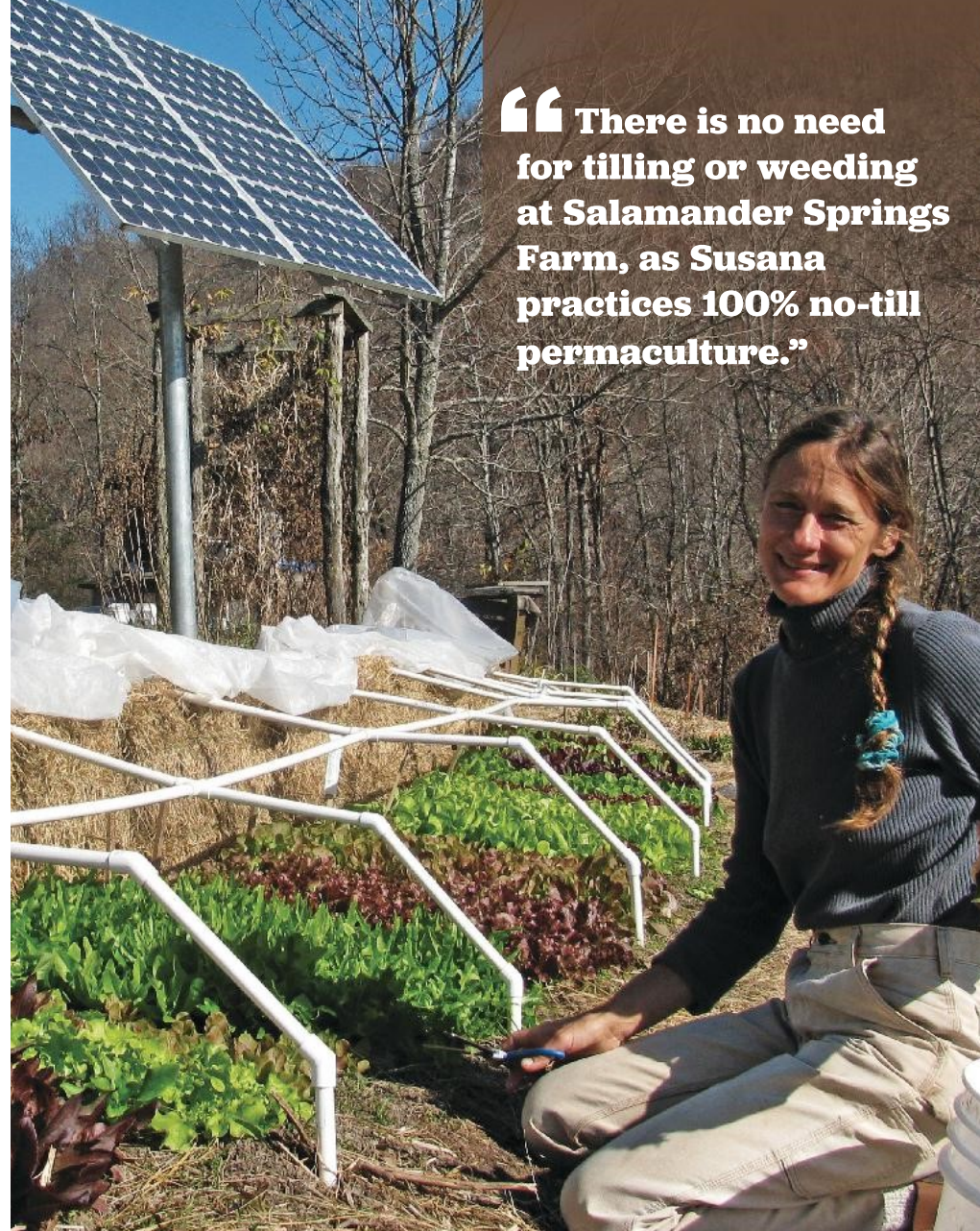
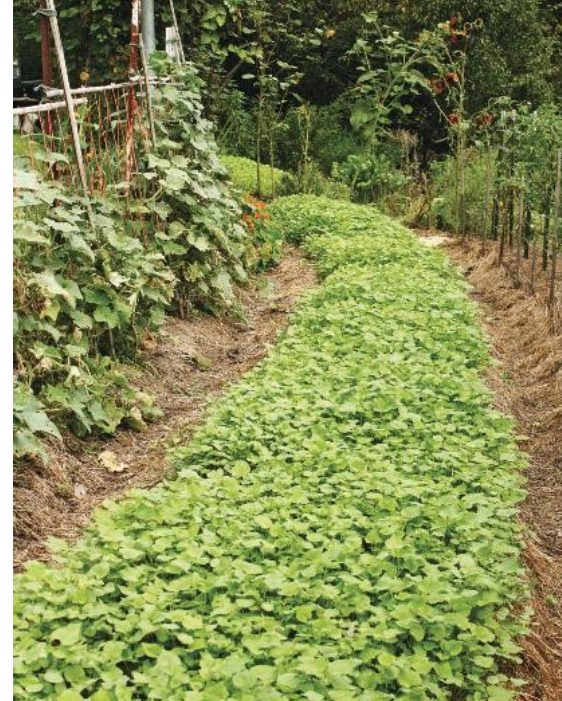


PHOTO: COURTESY SUSANA LEIN; ALL OTHERS BY JEREMIE ZIMMERMAN



ABOVE: Susana has built rows of contour swales on her mostly sloped land. They prevent erosion, and retain water and nutrients for plants.

CENTER: Susana poses next to a mini hoophouse that allows her to provide salad greens to her farmers market customers most of the year.

FAR LEFT: Susana built her passive-solar tiny house almost entirely from locally harvested and milled wood, and salvaged waste materials.

after Susana returned to the U.S., where she learned how genes represent themselves in corn reproduction while developing a Kentucky heirloom dent corn.

RETURNING HOME

Susana came back to this country in 1999, not an easy decision. “I had grown and learned so much about living within the means of our planet. The United States seemed to have gone farther away from the values with which I wanted to live...I realized that the best way to aid people in Latin America to reclaim stewardship of their own resources was to work toward change in my own country, which extracts resources from across the globe.” She spent a year working

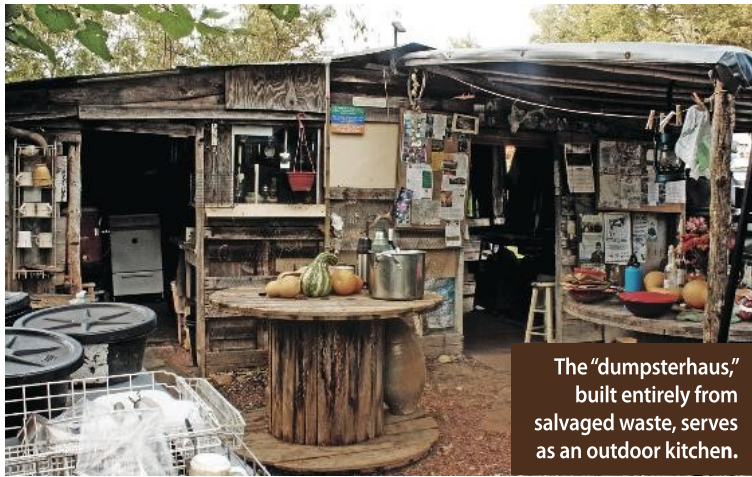
in the coal mining region of Appalachian Kentucky, then found herself in Berea, a rural college town in eastern Kentucky, working for Habitat for Humanity. There she connected with other similarly minded individuals who were interested in purchasing land together that they could manage sustainably.

Together they purchased 98 acres of unimproved, mostly forested land with no road access at a very reasonable price. Each was deeded about a quarter of the property and agreed to manage the land based on a common covenant. They would work cooperatively but retain autonomy in managing their own piece, with an agreed covenant of restrictions against things like pesticide use, overhead utilities,

pavement, or logging for profit. They also agreed on locations for road access and common access to natural springs on the property. The four owners named Salamander Springs Farm after the spring-fed creeks frequented by many species of salamanders. Preferring to live debt-free (she gave up credit cards in the 1990’s), Susana purchased her share with money she had saved while working as a trainer for the Peace Corps in Guatemala and on construction jobs after her return to the United States.

PERMACULTURE PRACTICES

In 2001 Susana began clearing the land and building infrastructure. The land was highly degraded, having been heavily logged and stripped of all top soil due to an old Appalachian tradition of letting hogs roam recently logged land. She cleared seven acres of ridge-top meadow, began re-building the soil, and planted a fruit orchard, nut trees and food forest. She put up some “quick”



The “dumpsterhaus,” built entirely from salvaged waste, serves as an outdoor kitchen.



Helpers at Susana’s annual corn harvest work party are preparing corn for storage in the corncrib.

structures using mostly waste from construction jobs and dumpsters—a composting outhouse, a solar shower, and an outdoor kitchen she calls the “dumpsterhaus.” She then spent three years living in a tent from March to November (renting in town for the winter) while building her passive-solar tiny house.

After moving into her house, Susana started building other structures, including a corncrib, a passive-solar clay-slip straw building for a work space, a potting shed, and a small solar electric system and freezer. She recycled a hoop house from a nursery business and rebuilt it. In 2012, she received funding from Kentucky State University to buy a commercial corn mill and the materials to build a long-needed granary for grains, dry beans and other storage crops.

Susana used locally harvested and milled wood to frame all structures on the farm, as well as recycled materials from construction jobs and dumpsters. She also employed natural building techniques to create earthen and lime-concrete floors, clay-slip straw walls and natural plasters—using local straw and native clay from her ponds.

In building up her land, she has employed many of the permaculture practices she used in Latin America. To retain water and nutrients on the land, and to prevent erosion, she uses contour swales. Unlike an engineer’s swale, the goal of a contour swale is to capture rainwater and nutrients, allowing them to seep slowly into the ground rather than run off. Contour

swales are laid out with an A-level (or laser level), to ensure that the entire length of the swale will be at the same elevation. Then, a trench is dug along the stakes delineating the land’s level contour.

The soil from the trench is used to construct a berm on the downhill side. Perennial plants and trees can be planted on the berm. A permanent cover crop keeps it stable and the land below thrives from the nutrients and moisture. There is no need for tilling or weeding at Salamander Springs Farm, as Susana practices 100-percent no-till permaculture.

RELAY CROPPING

Susana offers farm tours on the second Saturday of each month from April to November. On one tour I attended, she demonstrated how she works with cover crops to maintain a closed-loop system of agriculture. Rather than harvesting crops and waiting until the next season to start again while the weeds take over, she practices relay cropping by broadcasting grain seeds and dry beans for a continuous cover crop.

Relay cropping is sowing a crop while another is still growing, broadcasting seed over a relatively large area, and allowing the seeds to take

A Special Helper From Italy

To help educate others in permaculture and sustainable living, Susana has provided on-farm workshops, WWOOF (World Wide Opportunities on Organic Farms) and college experiential learning programs that have brought folks of all ages from around the world to experience the Salamander Springs Farm lifestyle.

One student, Bianca Casati, traveled from Milan, Italy in the summer of 2017. During her first year of studies at the University of Milano-Bicocca, Bianca saw the documentary *INHABIT: A Permaculture Perspective*. “I watched it,” she said, “and it was like my God, these people, they’ve actually found something that might work and they’re making it work and it’s so obviously right!”

She immediately began reading up on permaculture and decided to study environmental sciences at university. She didn’t just want to study it though—she wanted to experience it. “I want to really

put effort into how these things work,” she said, “but I also want to have experience in this field so that I know that what I’m putting all my energies into is rooted.”

Susana stood out from the rest in the documentary, as she was doing exactly what Bianca wanted to do. So she decided to email her, thinking it was more of a dream than anything. She was ecstatic to receive a prompt reply. They emailed back and forth a couple of times until Susana replied “Okay. You’re in!”

After completing her first year of university, Bianca packed her bags and headed to Kentucky. She arrived on the fifteenth of July and stayed through the Fourth of September. Transitioning from the busy city life of Milan to the small community of Berea—and the solitude of Susana’s home-
stead—was culture shock to the extreme. She admits that the first couple of weeks were extremely difficult. The solitude of the mountains, the daily physical labor,



Susana poses with a group of farm helpers at the Berea Farmers Market in Berea, Kentucky.

root where they will. This technique allows a farmer to take advantage of each crop's preferred growing season. For instance, in the fall she plants a winter cover crop of wheat or rye, along with crimson clover, winter peas and brassicas such as turnips, mustards and daikon radishes.

In mid-May, when the wheat or rye have formed seed heads, she broadcasts bean seed, then scythes or rolls down the winter mix, letting it act as mulch, providing the soil with nutrients and organic matter. After the beans have grown through the mulch and have begun to dry around

mid-August, she broadcasts buckwheat and cowpeas with brassicas and other cover crops. Then she cuts the bean plants and allows the beans to dry in her granary for shelling. Buckwheat is a fast-grower and acts as a smother crop to suppress weeds. The cowpeas follow along, creating additional biomass. Then, the cycle begins again, with the winter crop being broadcast around November, taking over when the buckwheat and cowpeas die with the first hard frost.

Susana also rotationally grazes poultry, moving her chicken tractor to various parts of the field to allow the

chickens to nourish themselves while tearing up the cover crop and weeds, fertilizing the soil in the process. Since the soil is well-covered and minimally disturbed, it retains moisture well and gives little opportunity for weeds to become established.

REAPING THE HARVEST

Susana's farmers market customers often comment on how much tastier her vegetables, grains and dry beans are than others they've had. She attributes this to her farm's extremely rich, truly organic (as opposed to conventional supermarket organics grown on soil that is heavily supplemented) living soil. The products she offers at her market stand are diverse. Her heirloom cornmeal corn, which she has bred and developed over nearly 20 years is renowned. The corn, Kentucky Rainbow Dent, is sold as seed through the Virginia heirloom seed company, Southern Exposure Seed Exchange.

To see Susana's educational slides for off-farm workshops, photos of workshops, projects, and natural building, visit localharvest.org and search Salamander Springs. 🌱

and—as she laughingly admitted—bugs and dirt everywhere! She was accustomed to the idea of insects and dirt, but only in a departmentalized city environment. In the little tent shelter where she lived on Susana's farm, they were up close and personal. Over time, she got over her fear of bugs and grew to enjoy playing in the dirt. By the end, she had formed many bonds with individuals from the nearby Berea and Clear Creek communities, and had developed a strong friendship with Susana.

When it was time for Bianca to return to Italy, Susana invited community members, friends, former farm apprentices and visiting creative artists who'd gotten to know Bianca to gather and send her off with a potluck, cards, storytelling, music and chatting around a bonfire.

One of the Susana's traditions for community gatherings at Salamander Springs Farm is to have everyone hold hands in a circle before dinner, and to say something about



themselves and what they're thankful for. For this one, she had everyone say what they were going to miss about Bianca. Nearly all of the 60-70 folks there had gotten to know her and experienced her

permanent smile and enthusiastic laugh. It quickly became clear that we were going to miss her and she was going to miss us. She wasn't going to miss the bugs, though.

—Jereme Zimmerman