

Jancis Robinson.com

A quest for conservation viticulture

27 Jan 2021



Inspired by a book calling for a soil-based agricultural revolution, Samantha Cole-Johnson went to visit exponents in Napa Valley and Mendocino. Next week – Sonoma.

In July 2020, I finished David Montgomery's *Growing a Revolution: Bringing our Soil Back to Life* (W W Norton, 2018) and, like many who have read an incredibly well-written and convincing book, I was hyped up. The opening sentence reads, 'What if I told you there was a relatively simple, cost-effective way to help feed the world, reduce pollution, pull carbon from the atmosphere, protect biodiversity, and make farmers more money?' – 286 pages later I was treating anyone who would listen to a frothing tirade against conventional agriculture.

Montgomery argues in favour of conservation agriculture, which he defines as adhering to three main principles: minimal soil disturbance (no-till), diverse crop rotations (vines are a perennial monoculture, so vine-growers have to introduce diversity in other ways), and permanent cover crop. These practices build microbial soil life, allow relationships between mycorrhizal fungi and plant roots to develop, keep pests and weeds at bay, and build carbon and nitrogen in the soil. So cogent are his arguments that I decided to go looking for vineyards in northern California whose owners follow these principles, some of whose wines are shown below.



Wines made by some of the producers using various conservation methods

‘I have no answers for you’, were the first words out of Will Bucklin’s mouth as I opened my truck door. My boots hadn’t even hit the ground on his Old Hill Ranch property and already he was refusing to give me answers. Instead, when asked about conservation agriculture and no-till, he posed his own question: ‘What’s the priority?’

In conservation agriculture, carbon sequestration is the priority. But what’s to say that that’s the most vital imperative? Some farmers believe organic production is more important, others prioritise water conservation, still others tout closed-loop farming. In northern California, there exists a conundrum whereby producers experience complications combining dry farming and no-till. Rory Williams of Frog’s Leap and Bucklin both see dry farming, in a state as water-parched as California, as crucial. They’re both experimenting with no-till but have had issues. Williams told me that people have been aware of the complications of combining the two methods for some time. Old-timers think that capillary action brings water to the surface after tilling. Williams doesn’t know whether that’s quite right; he tells me that his vines certainly perk up after tillage. At the point where you have to choose, which is more important: carbon sequestration or water conservation?

While they may have thrown a wrench into my initial argument, the producers I visited all share a conviction that conventional agriculture is not enough. My obstreperous tirade quieted, I was willing to listen.

Frog's Leap Winery, Napa Valley



Frog's Leap gardens

I talked to Rory Williams about their farming but for more on their sustainability practices, read [this excellent article on Frog's Leap](#).

Frog's Leap was virtually the first in the Napa Valley to farm organically and they've been dry-farming since 1989. Water conservation is their priority, so they've planted, and continue to plant, on deep-rooting 'dry-farming' rootstocks (St George and 110R). They plant bare rootstock directly (without grafting). The rootstock is painstakingly hand-watered only twice in its life, five gallons each time. The following year, budwood is grafted onto it. I asked Williams why not set up irrigation for the baby vines. 'If I put irrigation in, they'll grow their roots directly under the dripper and won't grow down', he believes.

In the past, the drive for deeper roots and the use of cultivation as weed control is what created the 'till baby till' mentality. Tillage assists the roots in exploring deeper. The compromise is that it breaks soil aggregates and compromises soil structure. Williams has run into trouble trying to

combine dry-farming and no-till methods, but he isn't convinced that it can't be done. He's currently experimenting on a couple of blocks but is realistic, 'I'm not just gambling with my livelihood, it's my whole family and everyone we employ. This block represents what will be a million dollars in Cabernet.' If it doesn't work, he won't continue, but he's hopeful and has invested in the possibility.

Frog's Leap plants peas, oats, vetch, bell beans (small-seeded fava bean), daikon (a type of radish) and white mustard as cover crops. They plant more nitrogen fixers in low-vigour soil and fewer in high-vigour soil. They use more daikon in their mix where [nematodes](#) and [fanleaf virus](#) are present (daikon seems to interact with the microflora in a way that nematodes do not like, and nematodes are a vector of fanleaf). Then, once the heavy winter rains have abated, they make a first disking pass to integrate the cover crop into the soil. In Williams' no-till test plot, instead of disking, he's employed a roller-crimper to flatten the cover crop just as it flowers. Unlike mowing (where the mowed material will decompose quickly), this creates a natural cover that deters weeds. Williams says that they may have to eliminate the vetch and oats for this plot as they are hard to crimp. He's on the lookout for a seed drill to continue the experiment if the old vines don't lose vigour. (If you till, you can plant cover crops directly in the turned earth but if you don't, you need a perennial cover crop, or a drill to insert seeds into the ground for you.)

In addition to organic production, dry farming, augmenting biological controls (varying the mix of cover crops to include more or fewer nitrogen fixers depending on the site), and experimenting with no-till, Frog's Leap runs their own compost programme and has planted massive gardens, hedgerows and fruit trees to create a more diverse ecosystem. Williams' parting comment to me was, 'Simple decisions have tremendous consequences and it's our job as farmers to put as much back into the land as possible'.

Alder Springs Vineyard, Mendocino



Alder Springs Vineyard in Mendocino

Stuart Bewley (in our main picture above) runs a large ranch and doesn't make wine. (He did for a short period, but only out of curiosity about what he could do with his fruit rather than for

profit.) He has a range of approaches both organic and chemical, and he's 100% invested in merging carbon sequestration with producing good-quality grapes. Alder Springs is a remote, high, 6,000-acre (2,430-ha) property with 150 acres (61 ha) planted to [197 different clones](#) and a total of 24 different grape varieties. In combination with [rangeland](#) and 13 rainwater catchment ponds, the rest is devoted to forests and class 1 fish-bearing streams (fish always or seasonally present). Bewley is a staunch proponent of California's Global Warming Solutions Act of 2006 named AB32. He proudly told me that, thanks to the forests, Alder Springs pulls 65,000 tons of carbon out of the atmosphere every year. He sells certificates to companies that overproduce on their cap of carbon emissions, as well as selling grapes.

Alder Springs has been no-till for 27 years and Bewley is adamant that it combats soil erosion, reduces run-off by increasing water-holding capacity (and therefore his irrigation is more effective), builds soil carbon, and makes [nutrients](#) more accessible for vines. He believes that when you run a plough through a vineyard you damage the mycorrhizal hyphae that create connections between a plant's roots and soil nutrients and microbes, lessening the plant's ability to take up nutrients such as nitrogen.

To protect his soil, keep it covered and keep weeds away, he employs perennial native bunch grasses (*Poa secunda* (pine bluegrass) and other *Poa* species, *Festuca rubra* and *Festuca ovina*) that he mows throughout the season. The cover-crop roots, he says, create pathways for water, earthworms and microbes. But I couldn't help noticing there was no cover crop immediately under the vine rows. Bewley explained that the native grasses and weeds have both proved to be a problem under the vines because they devigorate them.

This is generally where minimal-till producers would be willing to make an exception, but Bewley isn't. He has three approaches to managing the under-vine area without tilling. The first is by strip-spraying glyphosate, prohibited for organic growers and his least-favourite method by far. The second is an experiment he undertook to find a way around glyphosate: he layered compost, followed by a three-inch wood-chip mulch to combat weeds. The mulch blocks sun to the weeds and the compost provides enough nitrogen for the vines to be quite vigorous enough. While this works, it's enormously expensive and time-consuming.

His most recent project is an under-vine cover crop that's different from the native grasses he uses between rows. As he doesn't want to have to disturb the soil more than once, he uses perennials. All under-vine cultivation is done by hand (which is incredibly labour-intensive). He's found that white clover does the best: 'it comes back, it flowers, and it's good for predatory insects. Roman chamomile was good too but it's more expensive.' In order to mow the under-vine cover crop he bought a [Fischer-Twister](#) but there are also problems with this cover crop: while old vines can tolerate cover crops between rows, younger vines still lose vigour and he's had to remove the cover crop from some areas. He has more ideas.

The second part of this survey, on several practitioners in Sonoma, to follow.