HOT PICKS FROM OUR CRITICS • ARGENTINA: BEST MALBEC • TEQUILA TERROIR

Wine & Spirits

100 top values of the year

JUNE 2008 • $4.99
wineandspiritsmagazine.com

Running Dry

Do California's vines need drip?

Ehren Jordan (r) and Larry Turley

Strolling into a vineyard behind Turley Wine Cellars, Ehren Jordan announced: "This is the real deal."

The lanky 40-year-old winemaker was referring to a plot of dry-farmed zinfandel. Situated between Calistoga and St. Helena, its view extended south into the heart of Napa Valley, but the low-profile vines seemed to exist in a different era. Each plant grew on a wooden stake, ten feet from its nearest neighbor; no metal wires were suspended over the vines, and no irrigation hoses snaked among the trunks. As far as this modest eight-acre vineyard was concerned, we could have been in the Napa Valley of 1908.

Just behind us, another Turley vineyard, planted in 1996, exemplified a more modern approach. The vine cordons grew close together on horizontal wires above plastic irrigation lines, with the plant's annual shoots trained upward in a VSP (vertical shoot positioning) trellis. "That one sets way more crop," Jordan explained. "It's harder to control the plant, and it's really expensive. I have a feeling that, when we start to get wine over here, we're going to want to tear that one out."

As it turns out, the "old" vineyard is actually the newer one. The vines went into the ground in January 2006, and the following July, each plant received five gallons of water—the only irrigation they've ever gotten.

"We did it old school, by pulling a water container through the vineyard," Jordan said. "I can't tell you the number of people who said, 'You can't do that,' but it's been wildly successful—the plants are incredibly healthy and robust. On that other vineyard, the irrigation alone cost more than this one did to plant.

text and photos by David Darlington

Dry-farmed cabernet vines at Rubicon Estate in Rutherford

Scott McLeod, Rubicon Estate

"The sweetest tannin comes later in the harvest, but if you dry farm, you don't capture all that wonderful weather–those beautiful days are never part of your growing season." –Scott McLeod

"Today people marvel at vineyards like this, but thirty or forty years ago, there was very little irrigation in Napa Valley," Jordan said. "Before that, people didn't plant in the kinds of places they plant today. They couldn't farm some places because they didn't have the technology, so they did it only in places like this that had the right mix of characteristics—transitional, alluvial valley sands and gravelly loam that had the elusive combination of good drainage and moisture-holding capacity."

The world that Jordan was describing is old in more ways than one. In the most prestigious vineyards of Europe, grapes are sustained on natural precipitation throughout the year. To recognize the most favored sites, prevent excess production and enhance terroir and vintage distinctiveness, irrigation is illegal. In the more laissez-faire New World, irrigation serves to level the playing field, giving more people a chance to grow grapes in more places, no matter the geographic limitations.

But now people like Ehren Jordan are wondering if the effects have been more negative than positive. "There seems to be this urge to homogenize," Jordan said, the sky growing increasingly gray over his head. "But I say: Celebrate the differences—wet year, dry year, here's what the wine is like. Just this morning, I was in an old zinfandel vineyard that was planted in the 1880s, and the grower put in drip irrigation. When he complained that he couldn't get [between the vines] to cross cultivate, I asked why he didn't take the irrigation hoses out. 'It's kind of like crack,' he said. 'It's hard to wean the vine.' I said, 'You mean it's hard to wean the grower.' People think they can't do without it, but it's like systemic insecticides and fungicides—as soon as you feel you *can* do it, everything changes in your mindset and you start to push the boundaries. Where there used to be 450 to 600 vines per acre, now it's de rigueur to plant 2,400. With high-density planting, people have set themselves up to need irrigation, and the plants don't have the root structure to go after water. People say they want low yields, but one of the things you hook up to with irrigation is bigger yields—and cutting the crop back from a canopy that can make eight tons of fruit is not a formula for quality. I've had wines made that way, from yields of one and a half tons; that's not very interesting because the vine wasn't in balance. So if you're up for quality wine, dry farming is a good self-limiter. It's actually very logical."

Rain began to drizzle onto the vineyard. "Dry farming is a lost art," Jordan concluded, buttoning up his Carhartt coat and turning back toward the winery. "It's complicated, but so is producing high-quality fruit. Which is why there are only so many people making high-quality wine."

At this point Jordan seemed to speak from choice, not necessity. But in view of our apparent environmental future, the competition for water is poised to intensify among grape growers worldwide. Australia, now in the midst of its worst drought in 1,000 years, has recently seen the demise of many vineyards, with drastic cutbacks and skyrocketing water prices in those that continue to produce. Australia's entire population amounts to slightly more than half of California's (21 million Down Under compared with 38 million in the Golden State), with the latter predicted to hit 50 million by 2030. Most of that growth will take place in the southern—i.e., driest—part of the state, a semi-desert that gets most of its water from elsewhere—for example, the Colorado River, which has also been suffering a drought while simultaneously serving Las Vegas, the fastest-growing city in the U.S.

Similar to farmers in the San Joaquin Valley, the nation's most productive agricultural region, Los Angeles residents also rely heavily on water from northern California, with most of the H_2O flowing through pumps in the Sacramento-San Joaquin River Delta—a 738,000-acre estuary which, after meager 2007 rainfall (resulting in the lowest Sierra Nevada snow pack in 20 years), saw conditions for marine life deteriorate, prompting the biggest water-supply cutback in the history of the state.

In the future, says Andrew Walker—Louis P. Martini Professor of Viticulture at the University of California in Davis—"water for agricultural use is going to get the short end of the stick. And wine grapes, being the frill of life, aren't going to be high priority—they'll be hard to justify over other forms of agriculture." It may be true that grapes need minimal water compared to crops like alfalfa and corn, and that winegrowers rely less on municipal water than they do on underground aquifers and wells. But with population (and irrigation) increasing, even the viability of regional water tables is uncertain.

All of which is irrelevant to John Williams. "Water has never been available," he argues. "We're mining the aquifer for it now."

Williams, the longtime owner of Frog's Leap Winery, farms 200 acres of organically

grown grapes on the Napa Valley floor without any irrigation. In 1987, when he acquired his first vineyard—a then-15-year-old zinfandel plot, planted on phylloxera-vulnerable AXR rootstock west of Rutherford—he continued using an irrigation system that had been previously installed. Williams soon noticed, however, that the vines' vigor was decreasing—the shoot tips were drooping and, with the approach of harvest, the leaves were shrinking and discoloring early. Frank Leeds, a neighbor whose family had been dry-farming grapes in Napa Valley since the 1940s, advised Williams to turn off the water and start cultivating the ground. The vines proceeded to recover, and the vineyard—since renamed Tres Sabores by Williams's ex-wife Julie Johnson—is still thriving at age 35.

Half a dozen years after this initial episode—and with Leeds now managing his vines—Williams bought an irrigated 40-acre vineyard on the valley floor, also planted on AXR, that had been "pronounced dead" due to phylloxera. Instead of tearing out all the vines, Williams set about rehabilitating the soil—getting rid of the hoses, working organic matter into the earth, reducing the crop, and replanting two to three acres at a time.

"No one has connected the dots, but in my mind [irrigation] is what brought on the rootstock crisis," Williams says now. "Drip wasn't introduced until 1970, and before that AXR had been used with no trouble for 80 years. But 80 percent of irrigated roots are in the top meter of soil, which is where phylloxera is."

Williams stresses that dry farming is different from simply not irrigating. "It's a method of conserving moisture in the soil," he points out, "making it available to the plant and nothing else. Cultivation is the bedrock of dry farming; the old timers' mantra was 'Cultivate, don't irrigate.'"

This process begins in winter, when rains encourage cover crops, which get plowed into the soil in spring, providing the vines with "green manure." In summer, the ground is kept bare to prevent other plants from stealing water from grapes, and the soil is cultivated ("wicked") every ten days to draw moisture upward. "Our grapes are never without water," Williams says. "In late summer, at the hottest time of year, I can sink a shovel a few inches into the soil and bring up moisture. In August our vines have more water than an irrigated vineyard, because irrigation disconnects the vine from its natural rooting zone."

Dry-farming advocates seem united in this belief—that irrigation makes grapevines lazy, discouraging them from searching out water underground. Ehren Jordan compares such vines to stocked fish in a pond: "As soon as you walk onto the dock," he says, "they all come to the surface waiting for you to give them food."

"A grapevine's not stupid," Williams agrees. "If all the water and food are on the surface, why do the extra work of mining deeper for it? It's like a person eating fast food—if you can get enough calories from a hamburger and soda, why bother with spinach and broccoli?"

This vitamins-and-mineral analogy isn't arbitrary. "Where does grape juice come from?" Williams asks. "From water, minerals, sugars and organic acids. And where do those come from? For centuries, the answer was soil—until someone had the bright idea that we could supply them from a pipe."

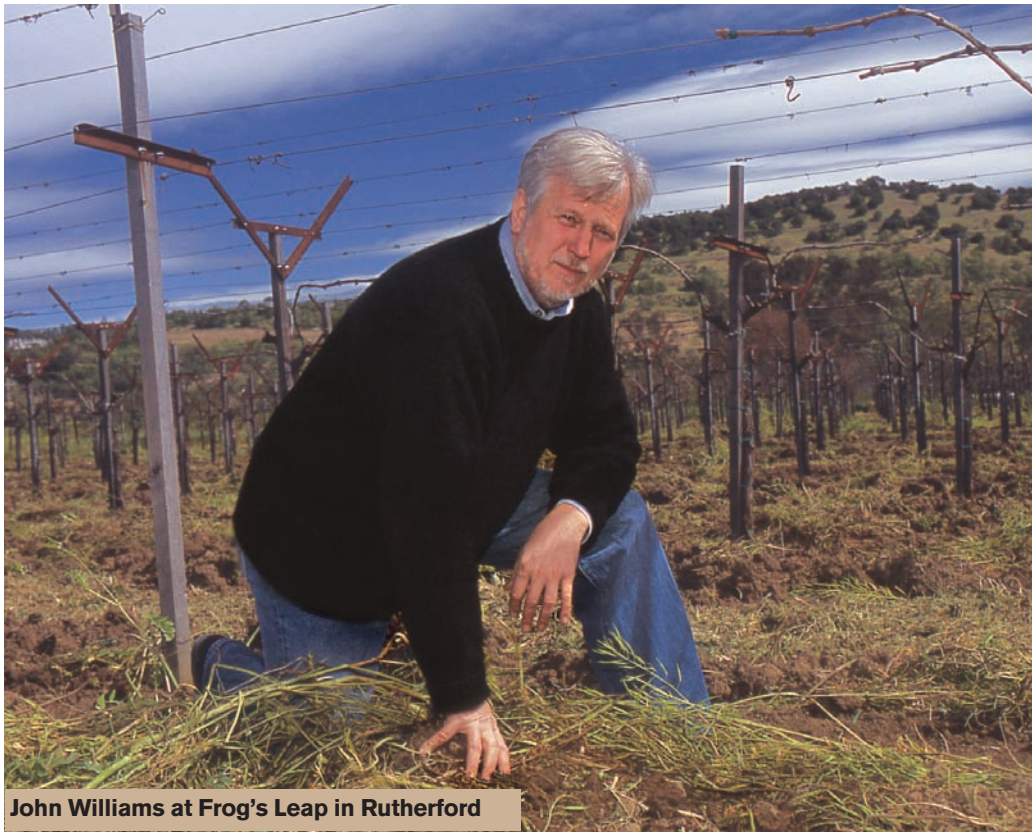
The takeaway? "We're killing our quality by irrigating," Williams declares.

As Ehren Jordan points out, however, dry farming is possible only in "privileged" places—in soils blessed with the seemingly paradoxical combination of good drainage and moisture-holding capacity, along with enough annual rainfall to meet vines' scant requirements. Pronouncing himself satisfied with two tons of fruit per acre, Jordan says Turley achieves this goal in Paso Robles vineyards on less than 10 inches of rain. Williams, whose crop on the Napa Valley floor runs twice that high, cites 18 inches as a minimum—but, he adds, "only one or two years in history have been that low."

Economic production is a major reason that so many vineyards are irrigated today—especially by grape growers who don't make and sell wine themselves, and especially in Napa Valley, where an acre of land costs $300,000. But even in the San Joaquin Valley, where most grapes go to jug wine and land is comparatively cheap, farmers have been pushed to the wall by global outsourcing of fruit. "It's very hard to kill a grapevine," says UC Davis's Andy Walker. "But you can do it economically. If you're only getting a thousand dollars per ton and farming two tons per acre, you're not even making back your costs. You have to produce ten tons per acre, and with irrigation you can regulate your crop."

Diane Kenworthy, who runs Sonoma's Sunbreak Vineyard Services, has in the past worked as a viticultural consultant for wineries like Simi and Ravenswood. "There's a whole continuum of what's rational, from agribusiness to farming to gardening," Kenworthy observes. "With a luxury commodity like wine, we tend to add

"The terms we use to describe 'ripe' have changed...Irrigation is behind the big-alcohol movement, because there isn't the same development of flavors at normal sugar levels." –John Williams



John Williams at Frog's Leap in Rutherford

Ancient dry-farmed vines in the sands of Contra Costa County, near Oakley

inputs because we can—people who produce Napa Valley cabernet can use every kind of high-tech viticulture at every step, and it's justifiable because they get fifty dollars for a bottle of wine and five thousand dollars for a ton of grapes. The morality of it starts to come in when all the stakeholders can't get what they need [see: Australia 2008]. Then you start to ask whether using water to get an extra half-ton of winegrapes is fair to everyone in the watershed. In a rational world order, there are sites that should probably be abandoned because they take too many inputs."

"Dry farming can work in some areas, but not in every area," confirms Matt Cline (formerly of Cline Cellars, recently of Trinitas, currently of Sonoma's S3X). "In Oakley, economically it doesn't."

For decades, Cline has been making wine from this out-of-the-way spot in Contra Costa County—a place where dry-farmed zinfandel, mourvedre and carignane were planted a hundred years ago by Portuguese, Spanish and Italian immigrants. Located on the banks of the Delta in the rain shadow of 3,800-foot Mount Diablo, Oakley's soil is sand—in some places 40 to 90 feet deep.

"I used to think those were the greatest grapes in the world, and that dry farming was the best and only way," Cline reports. "But I wasn't applying any economic rules. I still think those vineyards are great quality, but hundred-year-old vines are not sustainable at mainstream prices." In what is now a burgeoning Bay Area commuter suburb, an acre of Oakley vineyard land is worth hundreds of thousands of dollars to developers—a price hard to match (or resist) for dry farmers who can get only a ton of grapes from the same property. To compete with tract houses, wineries need to compensate growers very handsomely indeed, meaning they have to sell their wine for Napa-level prices—and, as Cline observes, "Nobody's willing to pay that for old-vine mataro [a.k.a. mourvedre]. So if growers are relying strictly on income from their grapes, they have to put irrigation in."

Cline recalls that, as an experiment, one year he irrigated Oakley's Big Break vineyard immediately after harvest. "The next year the crop was twice as big," he says. "And I liked the quality better. The fruit was there, but it wasn't a monster—it was balanced. Sometimes those wines are *too* big, and with dry farming, vintage differences are magnified. A lot of them are great year in and year out, but the colors and concentrations of tannins are different, and the vineyards themselves are depleted in dry years. If the grapes don't have the proper canopy, the vines get stressed and dehydrated—the leaves aren't dark green; there's no nitrogen; they need a drink of water! So when you see a vineyard where the vigor is renewed, either by better than average rainfall or by spring and fall irrigation, and you get a four-and-a-half-ton crop that's just as good quality or better, you say: 'We're hurting ourselves here with dry farming.'"

"To state that dry farming makes better wine than an irrigated vineyard is both overly simplistic and naive," says Scott McLeod, executive winemaker at Rubicon Estate (formerly Niebaum-Coppola). "It's like saying that caffeine has a negative effect on the human body. It depends on so many other things—the person's age, sex, physical well being, whether they smoke or have high cholesterol or blood pressure... it's not just one issue. And it's the same for irrigation."

Rubicon farms 235 acres of vineyards on Napa Valley's Rutherford Bench—40 of them without irrigation, though the number varies from year to year depending on variables like age and weather. As newer plantings increase their rooting depth, he says he expects the dry-farmed acreage to eventually comprise more than half the total. McLeod already elects not to water some blocks where infrastructure for irrigation exists, based on such factors as vine spacing, type of rootstock and type of soil.

McLeod cites a complex set of parameters he uses to decide whether or not to irrigate. "Soil depth is critical—shallow rock or heavy clay soils don't hold a lot of water, or hold it too tightly. In gravel the vines get thirstier, whereas the deep soils of the benchlands or Delta are easy to dry farm. Whenever you see an old, head-pruned,

dry-farmed vineyard, chances are it's on good, appropriately deep soil. As soon as you move into the hills, the soil is too thin. On steep, rocky hillsides, the vine will dry out, and the grapes won't have physiological ripeness."

If Williams and Jordan resemble fundamentalist believers, and Cline a reluctant realist who has lost his innocence, McLeod is the postmodern grower who embraces all forms of moisture exploitation, whether natural or artificial. Referring to both irrigation and dry farming as "tools," he says he thinks most vineyards are over-watered, but also calls water management "one of the easiest means of improving wine quality."

"A vine that's thirsty is a vine you can control," McLeod says. "It's like training tigers: When they're hungry, they'll do what you say." The state of this art, among high-end producers like Rubicon, is "deficit irrigation"—a high-tech science that replaces some, but not all, of the water a vine loses through evaporation, stressing the plant just enough to produce optimal fruit. To precisely measure a vine's moisture, the go-to device is the "pressure bomb," which gauges water stress in a grape leaf by calculating the force required to squeeze out a drop of liquid.

"Using a pressure bomb is like checking the air in your tires," McLeod explains. "We don't irrigate until we have a sign that the plant needs it, which is usually around mid-August. I really sweat the high-pressure events that we have in late summer; the low humidity, windy conditions and high temperatures are very tough on vines close to harvest—I've seen vineyards turn yellow and leaves drop off within three days. So if I have a trellis and irrigation, I like to be able to hydrate each vine with five or six gallons before the event. A vine is like a long-distance runner—hydration allows it to stay active longer."

In that sense, McLeod considers irrigation a risk-management tool. "Great years produce great dry-farmed wine," he acknowledges. "But irrigation is a great tool for uniformity—you can use it to mitigate harvest variation, avoid damage [to fruit], and get into the best ripening weather. With cabernet, I like to see harvest begin around the seventh of October, but our dry-farmed cabernet tends to ripen in early September. Since the entire vine has less water, physiologically it's moving ahead faster—the Brix might shoot up to twenty-six and then you're forced to pick, even though sometimes you might need another ten days on the vine to move into the right flavors. The sweetest tannin comes later in the harvest, but if you dry farm, you don't capture all that wonderful weather—those beautiful days are never part of your growing season. October weather is a gift, but you've got to get there—and irrigated vines work longer into the fall, because they have more water."

John Williams isn't persuaded by this argument. "The terms we use to describe 'ripe' have changed," he retorts. "When grapes are [naturally] ripe, everything goes back into the roots. What's a grapevine trying to do? Not make John Williams rich—it's thinking, 'How do I get my babies out there so birds will eat them and shit the seeds?' It puts survival on hold while it's measuring the sun angle, soil temperature and moisture, until it can make that call and switch over from sex to survival, putting energy back into its roots.

"Now that people are reaching out for higher sugar, they're eliminating the green flavors and tannin that cabernet needs for that cigar-box character," Williams observes. "I contend that irrigation is behind the big-alcohol movement, because there isn't the same development of flavors at normal sugar levels. Come taste the wines that made Napa Valley famous—Stag's Leap, B.V. and Inglenook [the latter now property of Rubicon] were all dry farmed and picked at 23.5 degrees Brix to make 12.5 to 13 percent alcohol wine. But that's all changing now, largely because of what irrigation has brought to the picture."

Ehren Jordan agrees. "If you could teleport a young cabernet forward from 1969 to today, and taste the 1969 Chappellet next to Harlan or Colgin, it would be radically different," he says. "It's a monumental bottle of wine—one of the greatest cabernets I've ever had, but it would have been grown on AXR or St. George [rootstock] with really wide spacing and no modern advantages like vertical trellising. So it would be more rustic in style than what people want today."

California winemakers like to point out that most European appellations where dry farming is mandated by law get rain during the growing season—that even Mediterranean regions like Provence can expect some precipitation by August. A notable exception was 2003, when record heat was accompanied by drought—and, as a result, the harvest in some parts of southern France occurred in July. With such conditions threatening to become more common with climate change, several important growers in Europe have acquired permission to "experiment" with irrigation, portending the latest way in which the Old World might emulate the New. (To some ways of thinking, in 2003 France was simply a curious new version of California.) But while rainfall projection is less reliable than temperature trends, many climate models foresee increased precipitation for the Pacific US—and it may also come to pass that, as the interior of the state heats up, the coast (including the Carneros district in southern Napa and Sonoma valleys) will grow cooler thanks to increased fog, created by greater temperature contrasts between the land and water.

Which is not to say that all coastal locations will fare alike. So far, for example, proximity to the ocean hasn't spared Ridge Vineyards, whose Monte Bello estate vineyard in the Santa Cruz Mountains is already experiencing higher daytime temperature peaks than in the past—with the result that its oldest dry-farmed blocks, similar to Ridge's old zinfandel vineyards in Sonoma County, will soon be receiving irrigation. "When it's really hot, we try to add a little water so [the grapes] don't desiccate so much," explains Ridge's vice president of vineyard operations, David Gates. "It moderates the tannins, and it can help with fluctuations in crop yield based on rainfall. It enables you to control the vines for your style of wine."

Irrigation makes it easier for winemakers to modulate the vagaries of the weather. But as Ehren Jordan points out, at what point does consistency become homogeneity?

Consistency, then, is perhaps the primary reason why irrigation is now so popular with California growers. Consumers shelling out hard-earned money want to be sure what they're getting, and irrigation makes it easier for winemakers to modulate the vagaries of the weather. But as Ehren Jordan posited at the beginning, at what point does consistency become homogeneity? And when does the traditional idea of wine—a natural product of earthly cycles in all their annual variety—become a predictable commodity? As time goes on, climate change may play a larger role than economics in determining the course of such questions. If New World vineyards start getting more rain, and Old World estates start irrigating their vines, the wines of both will be more alike than ever before.

But in the event of extended drought, dry farming might be the wave of the future—and, as in the past, wine grapes may again be grown only in the most suitable (read: sustainable) places. ■