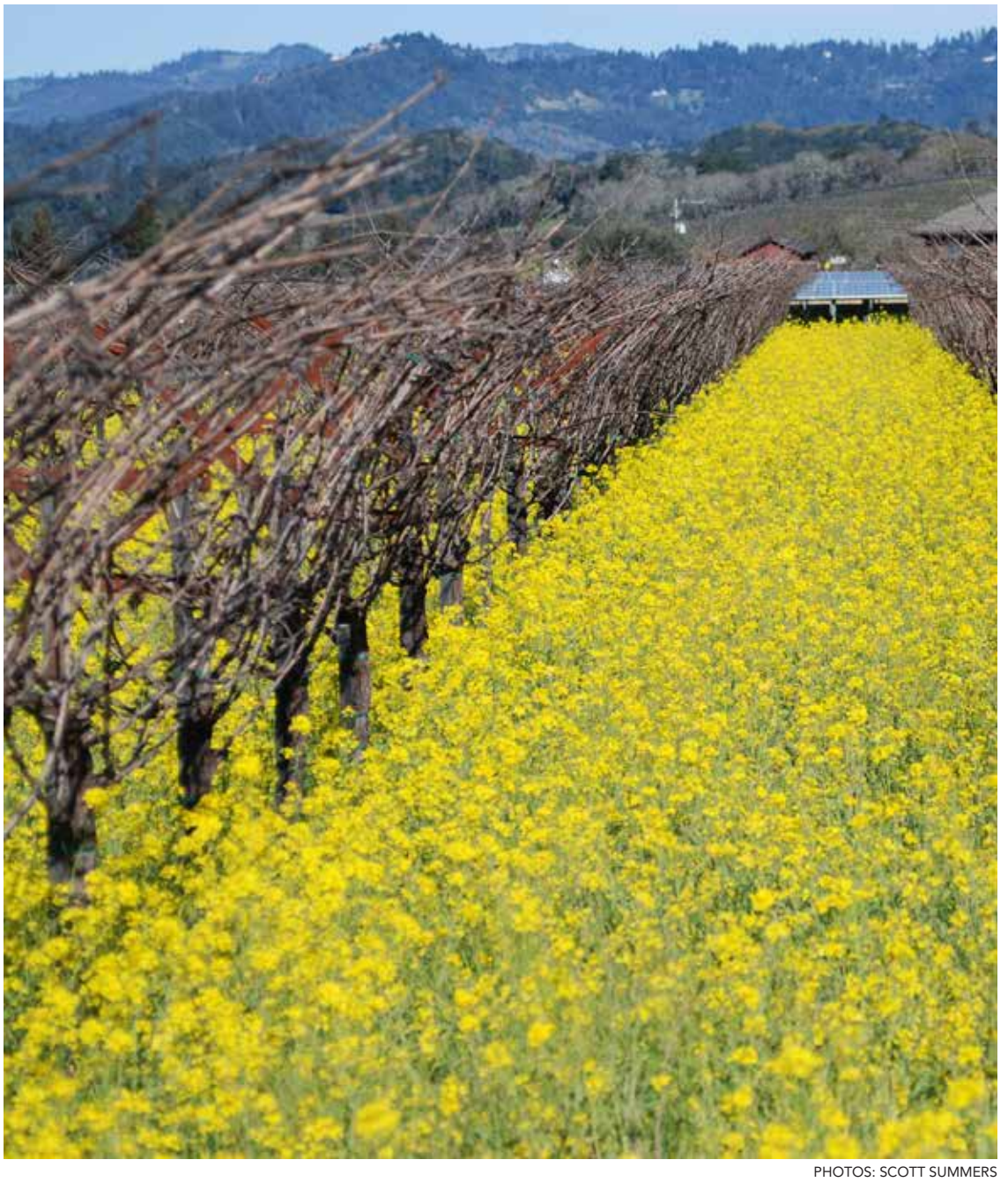
Keeping Pruning Simple and Effective

Don't over-complicate or under-appreciate the practice of pruning

Mark Greenspan

Dr. Mark Greenspan has more than a quarter century of scientific viticulture research and viticultural field experience. He specializes in irrigation and nutrition management, yield and canopy management, vineyard climate and microclimate, vineyard design and vineyard technology. He is the founder of Advanced Viticulture, Inc. based in Windsor, California (*www.advancedvit.com*), providing consulting, technology, vineyard management and vineyard development for wineries, winemakers and wine growers devoted to producing premium wines. Please direct queries to *mark@advancedvit.com* or 707-838-3805.

IT MAY SEEM LIKE a mundane topic to write about, but this is the time of year you are out pruning, so why not write about it? It's the first viticultural practice performed for the growing season. Well, arguably, post-harvest irrigation and fertilization are the first practice, but let's not be nit-picky. It's also one of the costliest operations performed all year, which is why more and more acreage is being machine-pruned, something that has been written about recently[1]. Mechanical pruning's adoption by premium winegrowers has been slow; and though I suspect it will continue to infuse all tiers of winegrowing, machine pruning is still a long way away from being accepted by high-end producers.



PHOTOS: SCOTT SUMMERS

This brings me to good old-fashioned hand-pruning. Besides being out in the brisk chill of winter, slogging around in mud in rubber boots, the practice of pruning can be mesmerizing, even hypnotically soothing, to the person holding the shears. But it's a tough job, and it requires considerable skill and practice. I have found that pruning can be taken too lightly: sending out a crew of lightly-trained individuals, who robotically prune each vine the same way. On the other hand, I've seen growers who over-complicate the practice by using pruning formulae, almost paralyzing them from getting the job done in a cost-efficient manner.

Geeking Out With Pruning Formulae

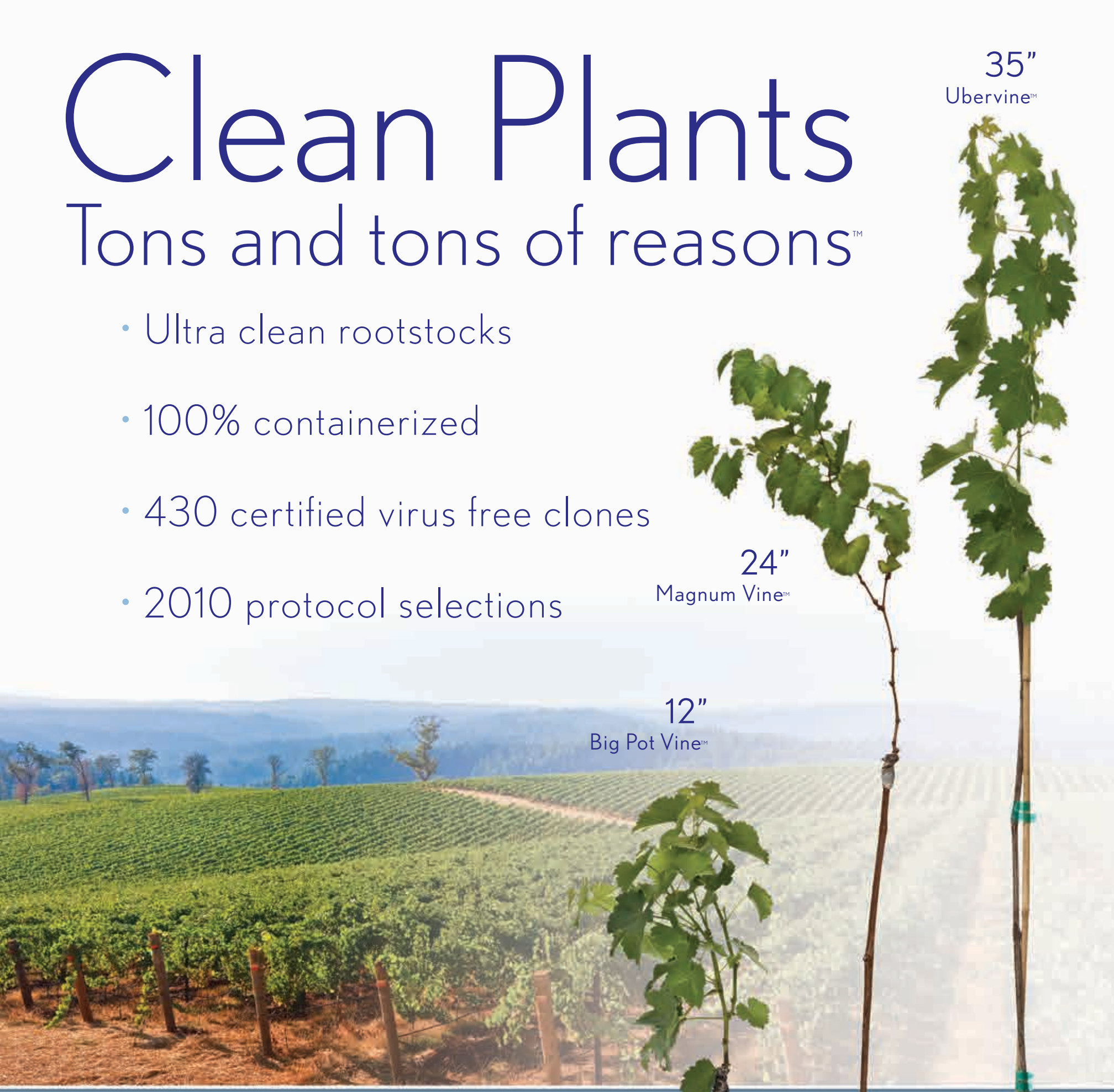
Too often is the observation of vines pruned by workers who are either insufficiently instructed, trained, talented or supervised. Those vines are pruned almost as if they were done by robots, with no consideration as to the size, health and potential productivity of the vine. Here, I want to say something about "vine balance," a phrase that I don't like to use often, but it does apply here. Weaker vines need to be severely pruned, and stronger ones can be left with more buds.

But vine balance is something that, I feel, gets excessively "geeked out." Some growers take pruning weights every year from each and every block or sub-block of vineyard, and develop pruning formulae based on those weights. I think pruning formulae, outside of research, are excessively academic, impractical and unnecessary. The pruning formulae are usually linear equations, with a baseline bud count and additional buds added to that

Clean Plants

Tons and tons of reasons™

- Ultra clean rootstocks
- 100% containerized
- 430 certified virus free clones
- 2010 protocol selections



INVITATION 20TH ANNUAL

FRIENDS DAY

Friday, May 5th, 2017
9am – 2pm
RSVP to marketing@duartenursery.com

Clean Plants
For Your Future

DUARTE TREES & VINES

Clean, Clonal, Containerized

1-800-GRAFTED

www.duartenursery.com • Hughson, CA

sales@duartenursery.com

YouTube

baseline as a function of the pruning weight for that block or section. Great, but are you really going to have the guys count buds on each vine based on that formula? I'm not against bud counts, but I feel that pruning formulae over-think the situation. Plus, they fail to treat variability within that block of vines, which can be considerable and needs to be addressed at a finer scale than can be achieved by a block-level pruning formula.

It's not necessary to use pruning formulae to achieve balanced pruning if you have a good trainer to instruct the crew and good supervision to keep reminding the pruners about the guidelines. It is even better to have a crew of people who "get the concept" and don't have to be reminded, after each dozen vines, about how to make pruning decisions.

Ignoring Vine Balance in Pruning

Not that I'm against balanced pruning, mind you. I think it is essential. It's quite frustrating to walk through vineyards that have been pruned and see vines that are too weak being pruned to skinny spurs or skinny canes retained that don't even give the vines a fighting chance to improve their lot in life during the next growing season. This, to me, is the greater sin of pruning, much more than the over-thinking, pruning-formula-generating folks. Though even those formula-driven guys can, and do, commit the error of unbalanced pruning on a vine-to-vine scale.

Vines pruned to tiny wood, either canes or spurs, will see uneven bud push, weak initial growth and usually stunted shoots that remain short throughout the season. The real failure here is that the problem is perpetuated or even made more severe from year-to-year because pruning to weak wood begets weaker wood. Over time, this can cause a vine to lose the ability to even recover. But severe pruning, when necessary, combined with ample vine nutrition and soil health, can allow a weak vine to join the minions of healthy vines surrounding it.

A Simple, Balanced Pruning Approach

It's really simple. Maybe too simple, but it works. Look at the last year's growth on each vine. At least, look at the girth of the canes being pruned back to spurs or canes. If they are too skinny, do not retain them. Skinny wood contains less carbohydrate than thicker wood, and stored carbohydrates in the dormant wood are needed for the initial shoot growth. Weak initial shoot growth most often leads to weak, short and skinny shoots. Don't think that they will swell up and balance themselves out next year. They won't. As a rule of thumb, I like to use 3/8" (9mm) diameter as the threshold for wood retention. I don't want to see any one-year-old wood retained that is less than this diameter. I wish that dimension was something more convenient to reference, but one-quarter inch is too generous a

guideline (i.e., it would leave too much weak wood), and a half-inch is too restrictive (it would cause us to prune off too much good wood). A wooden dowel on a string can be given to each pruner to get them calibrated to what the requirement is. Or a notch can be cut in a piece of aluminum or plastic. I've seen plastic templates used by nurseries to gauge the girth of cuttings used to grade planting material. These are great tools for this purpose.

This guideline is something that each and every pruner can apply to each and every vine, even if he/she is pruning as fast as possible. It can get ingrained in their mentality. It's just a matter of training. Once they get the concept, they will look at each pruning cut and, within milliseconds, know how severely to prune that retained wood. And the template tool they have hanging from their belt will help them re-calibrate as often as is necessary.

The selection method is applied differently to spurs and canes, of course, but the girth threshold is the same. For spurs, if the basal wood is less than the threshold, prune back to a one-bud or even a basal-bud spur. That may be hard to do, knowing that that single-bud will produce only one shoot and the basal buds are often less fruitful than the more apical buds. If this bothers you, then you should get your head out of this year and think long-term. The severe spur-pruning may very well lead to a strong shoot that will produce a cane that can be pruned to two buds the following year as is the standard practice. But leave a skinny little spur in year one and you are assured a skinny little spur in year two, with fruit that will probably be either small and underweight, be thinned off or be unripe by harvest time. No skinny wood!

And I'm not even talking yet about cordons. If the cordons are producing a bunch of weak spurs, they often are skinny themselves and are often brittle, indicative of a low density wood with poor carbohydrate content. Chop them off in many cases. Sometimes you just have to bite the bullet and cut the cordon off to as little as one position on each side of a bilateral so that the vine can push out some strong shoots and the cordon can be rejuvenated. Same mantra: no skinny wood!

As for canes, severe pruning applies to them just as much, if not more. Leaving a little skinny straw of a cane on the wire is one of the most common pruning mistakes I see, especially for younger vineyards that may have some vines lagging in their development relative to the others. If the wood is too skinny, don't leave a full-length cane. Cut it shorter to where the end cut is 3/8" in diameter. Or maybe you just have to go back to a spur that year to grow out a shoot worthy enough of forming a cane of proper girth for the year to follow. If you're not thinking a year ahead of time while you are pruning, you are missing the point. No skinny wood!

This is actually a very simple concept and does not require pruning formulae but one that assesses the capabilities of each vine (actually, each pruning cut) individually and creates a vine-specific approach to pruning.

Pruning Vigorous Vines

But what about the other side of the spectrum? When the vines are excessively vigorous? Well, pruning a vine stimulates growth by reducing the number of growing points. So, clearly, leaving more buds and wood is needed. But one first needs to look at their irrigation and fertilization practices, which may be excessive on one or both counts and, over the short and long-term, need to be adjusted to reduce vine vigor.

To get vigorous vines into balance by pruning is not easy. For spur-pruned vines, many growers leave "kicker canes"—retaining a cane on a part of the vine (usually at the head) that will leave many more buds, thus creating more growing points. I don't like kicker canes myself. They unbalance the vine, get in the way and often require a second step of removing them later in the season. Growers of lower-quality wines may retain them and harvest fruit coming from the kicker canes, but almost invariably, that fruit will ripen differently than the fruit from the spurs and will reduce wine quality if harvested.

Another technique is to leave more wood on spurs. I like this approach better than kicker canes, though it is not foolproof. One can prune a spur to three buds instead of two, but sometimes only the upper two buds will push, forcing the spur position to be undesirably lengthened the following year. I like a 2+1 approach better: leaving a second one-bud spur at each position, in addition to the two-bud spur. This more often results in push from each of the buds, reducing the likelihood of creating an excessively long position. But, as I said, try and reduce vigor other ways and you can go back to your normal two-bud spur-pruning.

For canes, pruning vigorous vines is less straightforward. Retaining more buds usually means adding another cane or two. This means that canes will either need to be overlapped or a second fruiting wire added so they can be separated. Overlapped canes are obviously going to create crowding of shoots and clusters, so that is not an ideal way to go for premium wine production. And adding another fruiting wire is a costly and, unless you planned on it from the outset, an admission that maybe your vineyard is just too vigorous because of rootstock choice, over irrigation, over fertilization, vines too closely spaced, etc.

In summary, vine-by-vine pruning is possible, and with a very simple rule of thumb, can be performed with little, if any, detriment to pruning performance. Over the long-term, this approach should balance the vines, thereby improving productivity, uniformity and wine quality. Just remember: no skinny wood! WBM

[1] Rieger, T. New Developments in Vineyard Mechanization and Precision Management. *Wine Business Monthly*. August 2016.