

# EcoVineyards inspiration

Visiting viticulturist from Australia shares strategies for sustainable grape growing by embracing functional biodiversity.

By Kate Prengaman

In arid Eastern Washington, nearly every vineyard features bare soil beneath the vines, thanks to herbicide or cultivation practices growers deploy to reduce competition from weeds.

But Mary Retallack, an independent viticulturist and agroecologist from equally arid Australia, sees that tradition of bare ground as a roadblock to Washington's quest for sustainable wine production.

"Please cover your soils wherever you can. Go from monoculture to polyculture, go with native species," she said during an April tour of vineyards on Red Mountain, following her Ravenholt Lecture at the Washington Advancements in Viticulture and Enology seminar, organized by Washington State University and the Washington State Wine Commission.

It may seem counterintuitive, but bare ground loses more water, said Retallack, founder of the National EcoVineyards program run by Retallack Viticulture. EcoVineyards is dedicated to increasing the resiliency of Australian vineyards through improved soil health and functional biodiversity. She's worked with hundreds of growers and established 76 on-farm demonstration sites in 14 viticultural regions over the past six years.

Her experience, as a third-generation viticulturist with a doctorate that explored the benefits of native plants in vineyards, draws a direct line between ground-cover plants and soil health.

"Bare soil puts the microbes on a starvation diet and the soil becomes like concrete, with little to no water infiltration," she said. "I'm on a real quest to reclaim the area under vines."

The idea was intriguing for Marshall Edwards, vineyard operations manager for Shaw Vineyards, one of the farms Retallack visited. In the heat of summer, the soil under the vines can form a sort of crust that can limit water infiltration. He has occasionally applied a soil surfactant to help drip irrigation penetrate the surface.

"Earthworms would do it for you for free," Retallack said. But it takes covering the soil with



KATE PRENGAMAN/GOOD FRUIT GROWER

plants to attract them — even weedy species will work. "Weeds are pioneer plants. Every time we create bare soil, nature will fill the void. They are trying to open the soil, doing that job for you."

Of course, noxious weeds require management, she said, but given the choice between a weedy vineyard floor and a bare one, she'd opt for weedy species.

In Australia, she works with growers to

determine which native species make the most suitable ground cover. Many Australian growers have settled on wallaby grass, a winter-growing perennial in the *Rytidosperma* genus, and find the habit minimizes competition with vines, Retallack said. She also highlighted the use of everlasting daisy, a showy but drought-adapted flower that adds striking visual appeal to vineyards and a chance for a side business in cut

Australian EcoVineyards consultant Mary Retallack demonstrates her insect sampling technique, which uses a butterfly net attached to a funnel that leads to a sample jar, at Hedges Family Estate during a tour of vineyards on Red Mountain, Washington, in April.

flower bouquets.

She encouraged Washington growers to review the list of beneficial native plants that WSU entomologist David James identified for the region, and she suggested finding those

that are low-growing, low-maintenance and commercially available — ideally by seed. James' trials, hosted by Ste. Michelle Wine Estates several years ago, looked at planting plugs of the native species in the drive rows,



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rather than under vines.

Availability poses a challenge, Retallack acknowledged. She recommends growers start with planting plugs in a small area to see which species grow well, and then scale up. She works with some growers who have established native plant “seed nurseries” — planted on weed mats for easier seed collection — to supply their own vineyards; others collect and sell the seeds from their cover crops to other vineyards.

Growers also like to know the effectiveness of the steps they take to change vineyard practices. During her visit, Retallack shared several simple approaches she uses to benchmark vineyards:

—**Insect sweep netting.** To evaluate the pest and predator populations, Retallack likes to use a basic butterfly net that she has rigged to hold a funnel leading to a sample jar on the end. Alternatively, a similar catchment can be set up under the vines with a funneling net on the frame of a folding table. Once she places the net below the cordon, she taps the cordon with a rubber mallet to startle the insects and cause them to drop into the net. Quickly detaching the sample jar — and putting on the lid — allows for nondestructive identification before the insects fly off.

—**Earthworms as indicators.** Counting the earthworms present in a shovelful of dirt can tell you a lot about your soil ecosystem, no lab test required, Retallack said. Earthworms create channels to aid water infiltration and root growth, and they “poop the nutrients



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Retallack presses a sample of young leaves so that the sap collects on a Brix refractometer. She believes healthier vines show higher Brix levels, and this simple testing method — using a tool wineries already have around to measure sugar levels in developing fruit — can help them benchmark efforts to improve vineyard resilience.

right where you want them,” she said — if soils provide them a healthy habitat. Dry, barren berms, on the other hand, prevent worms and other soil microfauna from working for you in

your vineyards.

That tip resonated with Brittany Komm, viticulturist for Sagemoor Vineyards, another vineyard Retallack visited. In a previous role, Komm focused on practices that would make the vineyard more worm-friendly — providing more ground cover and switching from fertigation to foliar applications — and soon found herself digging up a dozen worms in every shovelful of soil.

—**Leaf sap analysis for Brix levels.** Retallack believes that healthier vines suffer less from pests and diseases, citing the growing body of literature on regenerative agriculture in different crop systems. For a simple metric, she suggests gathering a sample of leaves — no petioles — and pressing them with a pair of vice grips to squeeze some sap onto a Brix refractometer. Wineries already have these around to assess sugar and soluble solid levels in the developing fruit, so it’s an accessible tool. Vineyards she works with have measured Brix ranging from 10 to 23.

Dykstra Laboratories in Florida has developed a general scale for interpreting the results, though not specifically for grapevines, she said. Long story short: the higher the better. The approach can be used to compare vines from blocks where compost additions or cover crops aim to boost soil health. For consistent results, growers should take such samples at a similar time of day when vines have already received several hours of sunlight.



Bare soil under vines reduces soil health and water infiltration, Retallack said. Here, at Shaw Vineyards’ Red Mountain Estate, she tests the compaction under the tire tracks by noting the force required to press a screwdriver into the earth.



**ONLINE:** To learn more about the EcoVineyards program, including fact sheets on different aspects of agroecology, best practices for vineyards, and case studies from participating vineyards, visit: [ecovineyards.com.au](https://ecovineyards.com.au).

For more detailed sap analysis, Retallack recommended growers connect with the regenerative-focused service provider Advancing Eco Agriculture. She doesn’t work with the U.S.-based company herself, but she cited the plant health pyramid, a resource AEA founder John Kempf published to summarize the relationship between plant nutrition and crop resilience to pests and diseases.

“What we can do is make the vines objectively healthy so they can defend themselves,” she said.

Those ideas held appeal for several of the Washington growers whose vineyards Retallack visited following her keynote lecture, but they also seemed daunting to implement. She urged growers to start small and see which changes can be integrated into their existing farming.

“You are already busy growing grapes, so sometimes going slower, like nature, and taking the time to observe, can help you go faster,” she said. “It’s a shift in thinking, but what’s the opportunity cost of the insecticide?” ●

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