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Dying on the vine | An Oakland wine grape grower wages a costly fight against damaging pesticide drift

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OAKLAND — The 2010 grape harvest on Legacy Vineyards could have been worse. Considering the wet spring, cool summer and late harvest marred by the arrival of hundreds of hungry migrating birds, the 6 tons of tempranillo grapes and 3 tons of pinot noir were a respectable take.

But the best news for wine growers Kevin and Karen Kohlman was this: Their vines did not get hit this season by pesticides drifting onto their property from surrounding private industrial forestlands. That's a change.

The California couple moved to Oregon in 1999 with dreams of creating a new vineyard. Under their plan, 2010 should have yielded 26 tons of grapes. Instead, year after year they've watched vines wither and die, killed by herbicide drift so severe it has sterilized the soil in places. They've put off launching their own label while they rebuild from the financial damage.

"Every spring and fall I don't worry about the frost," Kohlman said. "I worry about the herbicide spray."

The battle over pesticide drift — how harmful it is and what should be done about it — is old. But in the last year it's gained new attention in Oregon and nationally.

The U.S. Environmental Protection Agency has proposed revisions to restrict herbicide use in order to limit drift. The proposed language for herbicide labels has met with outrage from the chemicals' manufacturers and those who rely on the products to kill weeds and insects.

The pesticide industry, even as it fights the curbs, acknowledges that drift — the unintentional movement of chemicals from the place they're intended — is so challenging a problem that it can't be eliminated.

Perhaps nowhere are the issues as complex as in Oregon, where a rapidly growing number of vineyards share boundaries with farms and private forestlands where herbicide use has been commonplace for decades, often on rugged terrain that makes following product rules difficult.

Oregon — some observers and activists say — also suffers from lax oversight with muddy procedures for investigating complaints, creating a system that favors herbicide users and offers few remedies to those who say they've been harmed.

For the Kohlmans, herbicide drift sparked a years-long legal nightmare that highlights how hard it is to determine where toxic drift may come from, given how widely such chemicals are used in Oregon's rural areas.

### Shriveled vines

The Kohlmans knew almost nothing about herbicide drift when they bought their property, said Kevin Kohlman, who had worked in sales in industrial water treatment systems. Instead, he and his wife focused on the possibilities for their fledgling vineyard.

The Kohlmans had done extensive research and were looking for the right soil, altitude and exposure to the sun that would match the growing conditions for tempranillo, the grapes that yield a robust red wine popular in Spain. A decade ago, tempranillo was a twinkle in the eyes of western U.S. grape growers, and the mild climates of the Umpqua and Rogue valleys have lured growers interested in getting in on a potential new trend.

Kohlman thought the 100-acre spread just east of Tyee Mountain near Oakland had everything going for it. Besides the breathtaking views, his little plateau sits at about 1,100 feet with gentle slopes facing

the morning sun. The altitude kept him up off the valley floor with less fog, a boon for the sun-loving fruit. He planted his vines — 10 acres of tempranillo and 3 acres of pinot noir — and in 2002, when his bud break occurred at roughly the same time as similar regions in France and Spain, he thought his gamble was bearing fruit.

But by 2004, the year he expected his first real harvest, his vines began to wither. By September he had row after row of shriveled grape clusters on skeletal plants that were dying. It would take another year, after Kohlman had replanted with new vines that also began to fail, for him to understand what he faced.

When thousands more grapevines died in 2005, Kohlman called Steve Renquist, the OSU Extension Service horticultural agent in Douglas County, who had come out the previous year to take samples of Kohlman's dead plants. Renquist suspected herbicides were killing the vines, and tests confirmed that.

The mystery: Kohlman wasn't using the herbicides identified in tests.

Grapes are notoriously sensitive to chemicals that kill broad-leaf weeds. The compound 2,4-D — one of the most widely applied herbicides in the world — is so damaging to grape vines that wine-focused California severely restricts its use.

Grapes are particularly susceptible during the early bloom period from April through July, and Renquist, who works closely with orchard and vineyard owners in the Umpqua valley, sees damage all the time. In the 10 years he's worked in Douglas County, every grape grower he's interacted with has experienced unwanted herbicide drift, he said.

"Twenty-five to 30 percent have had a fairly significant incident," he said. "But not everyone gets hammered the way Kevin's vineyard got hammered."

Surrounded by forests

Kohlman said he didn't have to look far for the source. Roseburg Forest Products, which has 800,000 acres of forest in Oregon and Northern California, owns significant swaths of forest near the Kohlman vineyard. The beautiful treed slopes that provide such a magnificent backdrop also provide a steady income, and herbicides are key in commercial timber operations.

They're most frequently used after a clear-cut to knock down brush that competes with sun-loving Douglas fir seedlings. On steep slopes like the ones above the Kohlman vineyard, herbicides are most often applied by helicopter.

Roseburg owner Allyn Ford declined to be interviewed for this story. But Terry Witt, executive director of the pro-pesticide group Oregonians for Food and Shelter, said timberland owners need herbicides to get seedlings to the "free to grow" condition required by the Oregon Forestry Department.

"Free to grow" describes a tree that is taller than and out-competing weeds and shrubs in a 10-foot radius.

A couple of herbicide applications to a clear-cut before planting lets seedlings grow above the competition, Witt said.

Kohlman contacted Roseburg about the damage he was seeing in his vineyard and company representatives promised to investigate.

Roseburg and Kohlman eventually came to a financial settlement over damage to the vineyard from herbicide sprays in 2004, but the company disagreed that its sprays in 2005 had drifted onto Kohlman's land.

The dispute turned nasty: Kohlman sued in Douglas County Circuit Court, beginning an unusual four-year legal fight, pitting the grape-growing entrepreneur against one of Oregon's mainstay timber families.

In November 2009, a judge — brought in from Jackson County, because four Douglas County judges recused themselves — ruled that aerial spraying of herbicides is an ultra-hazardous activity, and that the state's pesticide loss reporting regulations violate the Oregon Constitution. The judge left one decision for the jury: whether Roseburg was the source of the spray that damaged Kohlman's vineyard.

According to court documents, Roseburg sprayed several herbicides on clear-cuts near the Kohlman vineyard in 2005. The application was done in April on land that ranged from one to four miles away.

After reviewing the evidence, the jury sided with Roseburg, concluding that there was insufficient proof to link the helicopter spraying on Roseburg land with the damage to the grapevines.

That verdict makes sense to Witt. The pesticides used on forests are common and are applied along highways and roads and even by homeowners, so tracking them to a source is difficult, he said.

"They are readily available to lots of people," he said.

### Complex terrain

But spraying veteran Stuart Turner, who appeared as an expert witness for the Kohlmans, was alarmed by the jury's decision.

Surrounded as it is by timberland, the Kohlman vineyard is a spray drift incident waiting to happen, Turner said.

At first blush, Turner is an unlikely advocate for the wine grower. A consulting agronomist based in West Richmond, Wash., Turner has worked extensively with farmers and foresters who use herbicides, often serving as an expert witness and testifying on their behalf in similar cases. He sees pesticides as an important tool. For 13 years, he headed the Helicopter Association International's committee on aerial applications.

"I work with these guys," Turner said of the pilots who apply the chemicals. "They're good guys. They're hard workers and they're excellent pilots."

But spraying herbicides on Oregon's steep slopes asks pilots to do the almost-impossible, Turner said. They must follow label directions that recommend flying low to the ground in low-wind and no-moisture conditions. That's a tall order in the Coast Range.

The application instructions for the weedkiller Oust, for example, warn that applying the herbicide

more than 10 feet above the target increases the potential for drift and that wind speeds of less than 3 mph or more than 10 mph can cause herbicide drift. Wind speeds slower than 3 mph can result in wind moving in variable directions or can be an indication of temperature inversions, which can also result in drift.

The Kohlman vineyard sits at the bottom of a funnel of very steep slopes. With some leaf trees remaining in the clear-cuts, pilots must fly as much as 90 feet off the ground, Turner said. The sprays occur in the morning when cooler denser air is flowing down the mountain, and conditions at the ridge top are often different from those at the bottom, he said.

“It’s a four-dimensional issue. You’re making applications in what anybody would consider the most challenging terrain: steep slopes, high rainfall and fog, which acts to entrap (herbicide droplets) carrying them a much further distance,” he said.

Research in eastern Washington state tracked pesticide drift moving as much as 22 miles from its intended location, Turner said.

Rules based on flat-land tests

Those who apply herbicides must follow label directions, but the directions were written based on trials in the 1990s designed by a task force made up largely of pesticide manufacturers using fixed wing aircraft and flying over flat lands in Texas, Turner said.

“Air has to flow over and around land masses. When it hits this Coastal Range, it’ll do curlicues,” he said.

The labels lack specific instructions for steep slopes, he said. They put the burden on pilots to adapt to local conditions.

At the Kohlman trial, Roseburg Foreset Products presented photographs that showed helicopters spraying a Roseburg clear-cut. The photos were taken by the Oregon Department of Agriculture in 2009. The agency, which had investigated Kohlman’s complaints in 2005, wanted to observe herbicide applications being done on Roseburg land to make sure label directions were being followed, said Dale Mitchell, assistant administrator for the ODA pesticides division.

The agency oversees pesticide use in Oregon for the federal government. While its initial investigation did find herbicide drift at the Kohlman vineyard, the agency was not able to determine the source, Mitchell said.

Based on their observations in 2009, they saw nothing that they thought was inconsistent with the herbicide label instructions, Mitchell said.

But Turner disagrees.

The pictures clearly show helicopters flying 90 to 100 feet off the ground and some images show snow on the ground, suggesting that the ground was frozen, a violation of label guidelines, he said.

“I was astonished to see these slides appear in this context from this source,” he said.

After the January 2010 verdict, the Kohlmans called for a mistrial, accusing the defense of illegally withholding herbicide sample data taken during the investigation.

The lab Roseburg Forest Products hired to analyze the samples of plant tissue and soil taken from both the clear-cut and the vineyard wrote in a summary report that the chemicals found in the vineyard were not detected in the clear-cut.

After the trial, the Kohlmans obtained the raw data those reports were based on and had them reviewed by two other chemists. According to documents filed in the appeal motion, the chemists the Kohlmans hired concluded that the same products — Oust, Velpar, 2,4-D and Garlon — were present in both the vineyard and the clear-cut in 2005.

The judge rejected the motion for the mistrial, ruling that the Kohlmans could have asked for the raw data sooner and that the defense had not illegally withheld it.

### Complaints by others

Judge Harris made two decisions in the Kohlmans' favor. He concluded that aerial spraying of two of the most potent chemicals used by Roseburg was an ultra-hazardous activity. That finding could have made it easier for the Kohlmans to win damages from Roseburg if the company was found to be the source of the spray. The judge also found that the state's narrow window for filing notice of a report of loss from pesticide drift violates the Oregon Constitution.

The Kohlmans appealed the judge's mistrial decision, but at a pre-appeal mediation hearing in December, the lawsuit was terminated. Neither side will discuss how it was resolved or whether a settlement was reached.

Kevin Kohlman said he spent \$500,000 on the case.

The Kohlmans aren't the first people in timber rich Lane and Douglas counties to complain about herbicide drift from aerial sprays. The residents along Highway 36 in the Triangle Lake area have been raising objections about spray drift for years, complaining of being sickened by sprays on clear-cuts as much as a mile away from their homes.

Day Owen, a Triangle Lake area resident who formed the group Pitchfork Rebellion, has lobbied the Oregon Board of Forestry, the Oregon Department of Agriculture and the EPA.

Residents in the Fox Hollow area of south Eugene who call themselves the Forestland Dwellers, often work directly with forest landowners and have successfully talked some foresters into spraying herbicides from the ground rather than by air.

But none has ever sued a timber company or farmer over spray drift. State law protects forest landowners and farmers from "nuisance lawsuits" by residents alleging trespass or harm from pesticide drift.

### A visit from the EPA

Most recently, Owen and his neighbors have taken their complaints straight to the EPA, filing a petition last spring asking the agency to investigate herbicide drift in the Coast Range and to mandate no-spray

buffers around homes and schools.

In June, EPA representatives visited Owen and his neighbors and also spent time with Kevin Kohlman, taking pictures of the terrain, listening to their concerns and compiling a report to help educate EPA top officials.

The EPA asked another federal agency to take a look. The Agency For Toxic Substances and Disease Registry recently reviewed the ODA's investigations into complaints of drift by Owen and his neighbors in the Triangle Lake area.

Owen had complained that state investigators failed to take samples that could have shown whether drift had occurred.

Richard Kauffman, the disease registry's regional representative, found the ODA's investigations lacking and presented his findings at a Nov. 17 meeting of the ODA's Pesticide Analytical Response Center board, telling them that their investigations lacked sufficient environmental or exposure data to make any reliable conclusions.

He also said that herbicide drift in the Coast Range is plausible given the topography, the proximity of homes, and the properties of the chemicals used.

He called for a study of drift in the area, but who would do it or pay for it is unclear.

"There shouldn't be aerial spray," said Lisa Arkin, executive director of the Oregon Toxics Alliance, a Eugene nonprofit environmental group. "You're poisoning everything to get a monocrop," she said.

Oregon's steep slopes are all the starting points of small streams that feed the state's rivers. State rules allow spraying over nonfish-bearing streams, but the products seep into rivers that often are drinking water sources for communities, Arkin said.

Kohlman said that while he supports the right of forest owners to manage their lands, he's frustrated that the state lacks a way to protect him from drifting herbicides.

His vines escaped damage in 2010, Kohlman said, but the threat remains. He pays the Oregon Department of Forestry to see a list of property owners in his area who file notice with the state that they plan to spray, so he can talk to them in advance. In 2010, he received 12 such spray notices. He's bracing now for the 2011 season.

He'd like to see herbicide label changes that specifically forbid aerial spraying under certain conditions.

"If there's a high potential for drift why can't you tell (applicators) not to spray? Why can't they be proactive in preventing drift?" Kohlman said.

Only the EPA could make that change. It has proposed additional label language warning applicators to avoid drift, but there is no schedule for making the change, agency officials said.

Changes that limit pesticide use have broader land-use impacts that need to be considered, said Witt, the forest-industry advocate. Forest land and farmland owners need herbicides to maximize

productivity of their lands, Witt said.

For Kohlman, the equation is simple. Prohibit the practices that can harm nearby property.

“It isn’t just the fact that farming is a risky business,” he said. “I’m fighting Mother Nature hard enough. I really don’t want to fight an industry. I really don’t want to fight the Department of Agriculture and the Department of Forestry.”

“I’m fighting Mother Nature hard enough. I really don’t want to fight an industry.”

— Kevin Kohlman, legacy vineyards

pesticides in Oregon

No one knows how many pounds of herbicides and other pesticides are used in Oregon each year. The state has intermittently required some users to report how much they use, but stopped comprehensive tracking in 2008 because of a lack of funding. Pesticide users over the years resisted environmentalists’ calls for the reporting, saying it’s expensive and time consuming.

Users reported applying 19.6 million pounds in 2007. Just over half was herbicides. Seventy-seven percent of total pesticide use was on farms, 4 percent on forests, and 3.5 percent on roadsides.

The four herbicides found in the Kohlman vineyard were among the top 100 pesticides used in Oregon that year:

7th: 2,4D, 778,878 pounds statewide

25th: Triclopyr (Garlon), 125,542 pounds

31st: Hexazinone (Velpar), 105,284 pounds

83rd: Sulfometuron methyl (Oust), 16,866 pounds

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