

## Rx for oak trees

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Finally, there's a way to protect trees from sudden oak death (SOD), a fatal disease caused by the water mold *Phytophthora ramorum*, a fungus-like pathogen that has killed about a million trees in California since its onset two decades ago, and which currently infects a million more. New research reported in *California Agriculture* (2009; **63**: 10–17) shows that the fungicide phosphonate wards off infection in coast live oaks (*Quercus agrifolia*), which are highly susceptible to SOD. Three other oak species, as well as tanoaks (*Lithocarpus densiflorus*), members of the beech family, also succumb to the pathogen in California.

The researchers treated coast live oaks in the field with phosphonate injections or bark sprays, then periodically sampled branches from treated trees to test them for susceptibility to infection in the laboratory, where the pathogen could be contained. The results suggest that phosphonate can



A tanoak tree (*Lithocarpus densiflorus*) gets its phosphonate shots from spring-loaded syringes.

protect trees for at least 2 years.

The study also debunked the popular alternative treatment of amending the soil with azomite, a naturally occurring, calcium-rich powder mined in Utah. Azomite completely failed to protect coast live oaks, leading primary author of the study, Matteo Garbelotto (University of California, Berkeley, Berkeley, CA), to liken its use to “treating pneumo-

nia with orange juice”.

Phosphonate, which is non-toxic and targets water molds, works by boosting the natural defense systems of trees. “It is most effective when applied preventively, before a tree is infected”, explains Garbelotto. Phosphonate is most promising for protecting oaks in forests with few bay laurel trees (*Umbellularia californica*), which are primary hosts for the SOD pathogen in California. The pathogen spreads partly by wind, and Garbelotto envisions treating oaks in exposed areas, such as on ridges and along corridors where wind may tunnel.

First introduced to California via the nursery trade, *P. ramorum* also infects trees elsewhere in the world. “In Europe, where beech forests are at risk, researchers are just starting a full eradication program, and phosphonate may be a good tool”, notes Garbelotto. But conservationists must be careful to treat only uninfected trees. “Otherwise, phosphonate may just mask the presence of the pathogen”, he cautions. ■