

When Evidence Replaces Assumptions: What a UC Davis Study Reveals About PCAs

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FOR YEARS, CALIFORNIA AGRICULTURE has operated under a cloud of accusations. Activist groups have assertively claimed that farmers use excessive pesticides, misuse these products, and that Pest Control Advisers (PCAs), especially those connected to product sales, promote unnecessary chemical applications due to conflicting financial incentives. These claims have influenced public opinion and contributed to regulatory reviews at the Department of Pesticide Regulation and legislative proposals at the State Capitol. However, they have seldom been tested against large-scale empirical evidence. That has now changed.

Study Challenges Core Assumptions

A comprehensive study, recently published in the *Journal of Pest Science*

by researchers at the University of California, Davis, directly examined these longstanding allegations and found that the main assumptions behind them do not hold up. The research, titled *Conflicts of Interest, Risk Aversion, and Pesticide Use in California*, was funded by the California Department of Pesticide Regulation to ensure objective analysis. Its findings are clear, but inconvenient for those who have based policy narratives on ideology rather than data.

What Are the Hypotheses?

What are the hypotheses, and what does it mean for DPR's Sustainable Pest Management (SPM) Roadmap? The major goal of SPM is to provide alternative forms of pest control products and systems, and to help move California's farmers and consumers toward those

controls and programs.

However, critics argue that in agriculture, those with the most ability to influence what farmers use for pest control, PCAs, are compromised in those goals by conflicts of interest. Critics have long hypothesized that first, PCAs recommend more costly older products, believing those products provide higher commissions or incentives, and second, PCAs rely on older products they can rely on, rather than newer products and technologies, to assure pest suppression and maintain their sales relationship with farm clients.

Even in DPR's SPM Roadmap report, you will find these allegations. While the allegations by some members of the SPM Roadmap Committee are buried in the back of the report, they remain part of it. As a result, the allegations persist.

As long as these allegations are allowed

to continue, they compromise the reputation and professionalism of PCAs. They also allow critics to paint the efforts DPR is making to promote the goals of SPM as "fake" or "a charade" that allows agriculture to continue operating under the current systems. The UC Davis study, now a peer-reviewed report in a scientific journal, clarifies the facts from accusations.

Testing Two Key Hypotheses

The study set out to test the two dominant hypotheses that have contributed to many California policy-makers' assumptions. The first is the conflict-of-interest hypothesis, which claims that PCAs working for retailers or manufacturers promote higher pesticide use to increase sales commissions. The second is the risk-aversion hypothesis, which suggests that PCAs routinely recommend more pesticide applications to minimize the risk of pest outbreaks, even when the risk is low, to avoid criticism from farm clients and to maintain sales or employment relationships.

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To evaluate these claims, researchers compiled one of the largest datasets ever used to study pesticide decision-making in California. They analyzed nearly 600,000 crop-years across 223 commodities from 2012 to 2021. The dataset compares pesticide use among farmers advised by four distinct groups: independent PCAs, sales PCAs, farm-staff PCAs, and farmer PCAs.


The size of this data is important. It shifts the focus from anecdotal stories and rare cases to clear, repeatable patterns that can be observed.

Results Undermine Conflict-of-Interest Claims

The results clearly challenge the conflict-of-interest hypothesis. Farmers advised by sales PCAs did not use more pesticides. In fact, they used slightly fewer pesticides than farmers advised by independent PCAs who do not receive sales commissions. Even more revealing, farmers advised by sales PCAs used less of the most expensive single-registrant products, precisely the opposite of what the conflict hypothesis predicts. If commission-driven overuse were true, this is where it would have shown up. But it did not.

The study found only one minor exception related to adjuvants, in which PCA-advised farmers used more adjuvant per application. However, when researchers looked at total adjuvant use, that difference disappeared. Because adjuvants themselves are not considered to have pesticidal actions, the multiple use of adjuvants did not result in more pesticides being applied and therefore did not contribute to higher pesticide sales or use. This detail matters because ➔

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Disease symptoms on pistachio leaves highlight why some PCAs recommend preventive treatments. A recent UC Davis study found that such decisions are often based on pest risk, not financial incentives. (Photo courtesy Louise Ferguson UC Davis.)

it shows that even when surface differences exist, they do not lead to higher overall chemical load or exposure.

The central claim that sales-affiliated advisers encourage farmers to spray more or use more expensive products is not supported by the evidence. That idea has been repeated so often in hearings and advocacy materials that it has become accepted as fact in many circles. The data, however, show otherwise.

Risk Aversion Reflects Targeted Decision-Making

The second hypothesis, which focuses on risk aversion, yielded more complex yet equally meaningful insights. Farm-staff PCAs were linked to increased pesticide use, but only under certain conditions. Greater use was observed in managing pests that can cause rapid, economically damaging outbreaks, such as arthropods and plant pathogens. No such rise was observed in weed control. This pattern suggests not random chemical

use, but targeted decision-making shaped by the biological realities of pest pressure.

Risk aversion, in this context, reflects a rational response to high-stakes uncertainty. Pest outbreaks can explode quickly, wiping out crops before corrective action is possible. Preventive treatment in these cases is not excessive. It is risk management. Notably, farm-staff PCAs did not show a uniform increase in use across all products, further undermining the caricature of advisers reflexively recommending more chemicals across the board.

Implications for Policy and Regulation

The implications for regulation and legislation are substantial. For years, some California policymakers have viewed adviser affiliation as a stand-in for irresponsibility. Restrictions, reporting requirements, and proposed bans have been justified by the belief that conflicts of interest lead to excessive practices. This study demonstrates that

the premise is false.

Equally important, the findings reveal a deeper issue in California's regulatory culture. Legislative initiatives and resulting regulations are too frequently based on narratives that seem plausible but are never thoroughly evaluated. When large-scale empirical research finally evaluates them, the results are often ignored or dismissed if they clash with predetermined goals.

Science doesn't work that way, and public policy shouldn't either. Evidence isn't a menu from which policymakers can pick only the conclusions they prefer. If regulation is to be credible, effective and fair, it must respond to data even when that data challenges long-held beliefs.

The UC Davis study does not advocate for weaker oversight or careless pesticide use. Instead, it offers something much more constructive. It demonstrates that farmers and advisers rely on professional judgment, that economic incentives do not automatically lead to abuse, and that real-world pest management decisions are more controlled and precise than critics suggest.

The report should also provide policymakers with greater confidence that the steps DPR is taking through its SPM Roadmap to provide more alternative tools and practices are resonating with farmers, PCAs, agricultural retailers and farm extension advisers. Farmers and PCAs are paying attention to new products and systems and are utilizing them based on efficacy and environmental and human health protection, not price. Manufacturers and retailers are supporting these new products and technologies by making them available and providing educational information, and extension specialists are offering education and training on new, innovative pest control systems and practices so PCAs can recommend and help implement them effectively.

California agriculture needs policies grounded in reality. This study provides that reality. The responsibility now falls on policymakers to recognize the facts, not the hyperbole, and adjust their approach accordingly.

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