

# PESTICIDE REPORTS

Division of Agricultural Sciences and Natural Resources • Oklahoma State University  
<http://pested.okstate.edu>



February, 2024

CHEM

- 1 TEST HELP WORKSHOPS SCHEDULED FOR 2024.
- 2 DATES SET FOR SPRING UNWANTED PESTICIDE DISPOSALS
- 2 EPA ISSUES ADVISORY ON PESTICIDES USED TO CONTROL VARROA MITES IN BEEHIVES, INCLUDING COORDINATED EFFORTS TO SUPPORT THE BEEKEEPING COMMUNITY
- 3 QUESTIONS ABOUND ON HERBICIDE STRATEGY
- 5 HELPFUL TIPS FOR USING ADJUVANTS IN SPRAY DRONES
- 6 STUDY FINDS TICK-REPELLING POTENTIAL IN THREE BOTANICAL COMPOUNDS
- 7 BAYER LOSES \$2.25B ROUNDUP VERDICT
- 9 CONTROVERSIAL HERBICIDE TIED TO PARKINSON'S GETS GREEN LIGHT FROM EPA FOR CONTINUED USE
- 10 USDA FINDS TOLPYRALATE HERBICIDE HAS SURPRISING EFFECT ON SOME CORN VARIETIES
- 11 CEU MEETINGS
- 13 ONLINE CEU LINKS
- 13 ODAFF TEST INFORMATION

## TEST HELP WORKSHOPS SCHEDULED FOR 2024

The Oklahoma State University Pesticide Safety Education Program (PSEP) has scheduled a test help workshops for February 14 in Oklahoma City and February 21 in Tulsa.

The Oklahoma City workshop will be at the Oklahoma County Extension Center at 2500 N.E. 63<sup>rd</sup> St. in Oklahoma City. The Tulsa workshop will be at the Tulsa County Extension Office at 4116 E 15<sup>th</sup> in Tulsa.

Registration cost is \$50 before February 12 for Oklahoma City and \$65 after February 12. Registration cost is \$50 before February 19 for Tulsa and \$65 after February 19. Registration will include a copy of Applying Pesticides Correctly. This is the study manual for the core and service technician exams.

To register for this class please go to the Pesticide Safety Education Program (PSEP) website at <http://pested.okstate.edu/html/practical.htm> and click on the register online link. Class information and an agenda is also at that website. Future 2024 workshop dates can be found on the website as well.  
(OSU PSEP)

## **DATES SET FOR SPRING UNWANTED PESTICIDE DISPOSALS**

ODAFF has scheduled the next Unwanted Pesticide Disposal Program collection dates for April 2024. They will occur April 22 in Altus and April 24 in Shawnee. The locations are the Jackson County Expo Center and the Heart of Oklahoma Expo Center. The Disposals will run from 8 a.m. to 1 p.m. rain or shine at both locations.

There is no charge for this program. **Limit is 2,000 pounds per entity.** ONLY PESTICIDES will be taken at the sites (no fertilizer, paint, oil, etc)! If you have any questions, contact Charles Luper (OSU) at 405-744-5808 or Ryan Williams (ODAFF) at 405-522-5993.

April 22 Jackson County Expo Center,  
412 Todd Ln, Altus, OK

April 24 Heart of Oklahoma Expo Center  
1700 W Independence St, Shawnee, OK

For more information, please go to <https://extension.okstate.edu/programs/pesticide-safety-education/unwanted-pesticide-disposal-program/index.html> (OSU PSEP)

## **EPA ISSUES ADVISORY ON PESTICIDES USED TO CONTROL VARROA MITES IN BEEHIVES, INCLUDING COORDINATED EFFORTS TO SUPPORT THE BEEKEEPING COMMUNITY**

Today, EPA is issuing an advisory to clarify what pesticide products and active ingredients are registered to control Varroa mites (*Varroa destructor*) in beehives, what tolerances or exemptions under the Federal Food Drug and Cosmetic Act (FFDCA) apply to those

products, and how the Agency views the use of unregistered products to treat beehives for one's own personal use. Additionally, EPA remains committed to collaborating with and supporting the beekeeping community and is providing an update on those efforts. This includes working with the beekeeping community to register new tools for managing beehive pests and working with our federal and local partners to advance valuable research.

### **Advisory on Pesticides used to Control Varroa Mites**

Varroa mites are parasites that feed on honey bees (*Apis mellifera*) and transmit numerous honey bee viruses, both of which lead to reduced lifespan of bees. The health and longevity of a honey bee colony can be critically damaged by an infestation of Varroa mites. Once infested, if left untreated, the colony will likely die. Varroa mites are a national threat to bee colonies and in turn to farmers with crops dependent on pollination services provided by bees, and ultimately to food security in the United States.

EPA has recently learned that beekeepers may be using products containing pesticide active ingredients (*e.g.*, oxalic acid, formic acid, amitraz, and thymol) that are not registered pesticides to control Varroa mites in bee colonies. In the advisory issued today, EPA continues to affirm that the use of registered pesticides must comply with labeling requirements under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), that pesticide residues in or on food derived from beehives (*e.g.*, honey, comb, wax, propolis, royal jelly, pollen) must comply with any federal tolerances under FFDCA, that use of unregistered pesticides to control varroa mites cannot extend beyond personal use, and that there may be more restrictive state requirements that must also be followed. EPA remains committed to supporting states with primary enforcement authority to ensure compliance with FIFRA requirements.

### **Additional Efforts to Support the Beekeeping Community**

In the past several months, EPA has registered two new Varroa mite control products (*i.e.*, Varroxsan™ and Ez-Ox™ tablets) containing oxalic acid as the active ingredient. Each product allows for easier application of

oxalic acid, and in the case of Varroxsan™, a slower release and longer acting application of oxalic acid in the honey bee colony. In approving pesticide products for use, EPA completes a robust evaluation and determines that uses of these products will not pose any unreasonable adverse effects when used according to the label instructions. EPA will continue to prioritize the registration of pesticides that target Varroa mites and continue to provide helpful information about these products.

EPA also continues to partner with the Interregional Project Number 4 (IR-4) to support the registration of new products to control Varroa mites and to provide guidance to beekeepers. IR-4 works with growers to develop data required by EPA for the registration of pest management tools for specialty crops. IR-4 has been instrumental in developing the required data to support registration of many pest management products allowed in beekeeping. EPA is exploring additional opportunities with IR-4 to further support the beekeeper community to combat Varroa mites and emerging pests of concern (e.g., Tropilaelaps mite), including identifying additional studies that IR-4 could support for efficacy or pesticide residues, leveraging IR-4's knowledge to help potential applicants through the FIFRA registration process, and facilitating existing or new partnerships across public and private sectors to address challenges confronting the beekeeping community.

EPA, in collaboration with [USDA](#) and federal, tribal, and state partners, have been coordinating on several other efforts to help address this nationwide threat. For example, for decades, EPA has also been interacting closely with USDA on understanding and mitigating factors associated with declines in honeybee health. EPA works with USDA to determine the extent to which pesticides, pests, and pathogens may be associated with bee kill incidents. Additionally, EPA and USDA have been involved in research on Varroa mite resistance to pesticides (e.g., amitraz, coumaphos, tau-fluvalinate) and pesticide residues in beehives. Other efforts include prioritizing registration of pesticides, providing compliance support, conducting research on product efficacy, evaluating the factors associated with and mitigating bee kills, and developing models/tools for evaluating bees, integrated pest management approaches, and other guidance.

Please see EPA's [website](#) for a copy of the advisory and additional information on the currently registered pesticide products for controlling varroa mites in beehives.

#### [Advisory for Beekeepers](#)

(EPA, January 8, 2024)

<https://www.epa.gov/pesticides/epa-issues-advisory-pesticides-used-control-varroa-mites-beehives-including-coordinated>

## QUESTIONS ABOUT ON HERBICIDE STRATEGY

Farmers aren't the only ones who have questions about the Environmental Protection Agency's (EPA) Draft Herbicide Strategy and how it might transform the application of conventional agricultural pesticides in the future.

During the Illinois Fertilizer and Chemical Association (IFCA) Annual convention this week, a panel of speakers representing pesticide registrants, university researchers and state departments of agriculture spoke to an audience of custom applicators, seed dealers, agronomists and others. They discussed the potential repercussions of the EPA's proposed plan and the many unanswered questions about it.

"One of the things that is causing the most angst in the ag community is the uncertainties created by this policy," said Frank Wong, U.S. industry affairs lead at Bayer. "I kind of feel like EPA is flying by the seat of their pants right now. They're still trying to figure out how to build a policy that actually works."

The draft strategy, which was released last summer, represents the agency's attempt to become legally compliant with the Endangered Species Act (ESA) while still ensuring predictable herbicide access for growers. The strategy proposes a menu of mitigation measures intended to reduce off-target movement of agricultural herbicides and protect endangered and threatened

species and their habitat from exposure. But many questions surround how the final proposal will be implemented and enforced.

"The way that EPA is rolling out this new strategy is such a wholesale fundamental change in how pesticides are regulated in this country," said Josie Montoney-Crawford, associate director of public policy for the National Association of State Departments of Agriculture. "This was not a discussion (EPA) had with state lead agencies before things rolled out. The hard part is we're asking a lot of questions and not getting a lot of answers right now."

Here are five unanswered questions about the Draft Herbicide Strategy that the panelists addressed during the IFCA annual convention:

#### 1. What does Herbicide Strategy compliance look like?

"If I'm utilizing multiple chemistries on my farm, how complex is it going to be for me to remain compliant with the label?" asked Montoney-Crawford. "Probably increasingly complicated. We have a lot of questions on whether or not you're actually going to be able to do that."

#### 2. Who's responsible for the mitigation measures?

Aaron Hager, associate professor of weed science at the University of Illinois, said that many of the mitigations outlined, such as establishing grass waterways, filter strips or contour farming, will require physical manipulation of farmland.

"The last FarmDoc survey I could find indicates that about 77% of Illinois farm ground is not farmed by the owner, so it raises all sorts of questions," he said. He posed a hypothetical situation where a landowner would have to take 15 acres out of production so that a waterway could be installed in a field for mitigation. "I'm guessing there are going to be some landowners who say no, you can't do that because that's going to be X number of acres less revenue."

#### 3. Who will be liable?

KJ Johnson, IFCA president noted that in the past, whoever was in the cab of the sprayer was the liable party for any negative effects of an herbicide application.

"We're seeing this kind of shift in where liability is going to fall," Montoney-Crawford said. "Does it lie on the person who's actually making those applications on the farm, but doesn't have control over the land? Does it need to fall instead on the landowner, who may or may not be meeting those mitigations? And then particularly even more relevant is going to be what kind of documentation do you need?"

#### 4. How will enforcement occur?

Montoney-Crawford explained that as co-regulators with EPA, the state departments of agriculture have been responsible for the enforcement of herbicide label requirements. Ensuring compliance and enforcing the Herbicide Strategy would greatly expand the states' roles, requiring more staff, funding and other resources.

"We recognize that at the end of the day, if it can't be reasonably implemented on an operation, it probably can't be reasonably enforced either," Montoney-Crawford said. "It has to be workable for those applicators."

#### 5. When might the herbicide strategy go into effect?

It's been nearly six months since the Draft Herbicide Strategy was released. A Final Herbicide Strategy is expected by May 30. That's the date EPA agreed to when it settled the longstanding "megasuit" that covered more than 1,000 pesticide products and 35 active ingredients.

While EPA is expected to produce a final proposal by the May 30 deadline, implementation time frames are unknown. Wong described it as "TBD."

"This is all proactive, based on the fact that if EPA does nothing, they're going to potentially lose (herbicide) registrations or vacate them," he said. "It's maybe more than they need to do to get where they need to go for species protection, but that's the boat we're in right now."

Reuben Baris, regulatory policy leader with Corteva, echoed Wong's assessment.

"The reality is the way ESA is written, a federal agency must ensure that any action it takes does not result in the jeopardy or continued existence of any species listed as threatened or endangered or the habitat which it depends on," he said. "So, with every decision EPA makes, they're vulnerable until they find a path forward. Every day that goes by is another day of vulnerability.

"If EPA gets sued and loses, we all lose because those tools are taken out of your toolbox and you're left with less tools," Baris continued. "We have to navigate that place where EPA is able to meet its obligations, but it cannot be at the burden of agriculture. Those are unworkable solutions."

The Draft Herbicide Strategy can be found here: <https://www.regulations.gov/document/EPA-HQ-OPP-2023-0365-0009>

(Progressive Farmer, January 19, 2024)  
<https://www.dtnpf.com/agriculture/web/ag/crops/article/2024/01/19/five-unanswered-questions-epas>

## HELPFUL TIPS FOR USING ADJUVANTS IN SPRAY DRONES

As the use of spray drones grows in popularity throughout the agriculture industry, the technology is not without its challenges.

According to Johnnie Roberts, [CPDA](#) director of application – adjuvant chemistry, some of those challenges include:

- lack of agitation
- foaming issues due to low spray volumes
- spray drift
- droplet bounce or lack of spreading

One method Roberts suggests using to resolve these issues is adding an adjuvant.

"We currently have a whole range of non-ionic and organic silicone-type adjuvants that can reduce spray droplet bounce and increase coverage, we have compatibility and foam reduction agents, and we also have a wide range of drift reduction and deposition agents," he says.

Due to ongoing research and the large number of variables, Roberts adds there isn't a one-size-fits-all adjuvant for spray drones – the decision should be made on a case-by-case scenario.

"There's a lot of variables in play that may make this a more custom approach for the type of application that we're making," he says. "No. 1 is what is the problem? Are you having foam issues? Is it a coverage issue? Is it one that's related to drift and evaporation compatibility? There's a lot of commercial materials on the market today that are designed to address each one of those."

### Adjuvant Formulation Considerations

For those experiencing foam issues in drone-based application, Roberts suggests using an oil-based adjuvant over the ones based on surfactant. But at the same time, spray uniformity should be top of mind due to the lack of agitation in a spray drone.

"If you would have an oil-based system or oil-based adjuvant, that spray mixture should be uniform for at least 10 minutes, because we don't have the luxury of high agitation to keep it in suspension," Roberts says.

He also recommends adding a compatibility agent to spray mixtures that include fertilizer before adding the pesticide – though its use may differ than what you've used in a traditional sprayer.

"A lot of these compatibility agents have the ability to disperse spray mixtures, but they're also going to make for a low level of suspension. It's not an issue in conventional sprayers with plenty of good agitation, but it could be one in a drone application so this is something that you will need to do and see in a jar test," Roberts says. "It may be an issue of just adjusting the compatibility agent rate lower than what you traditionally did. But again, a certain amount of testing the water before we jump in is going to be necessary in some of these spray mixes."

## Use Rates and Regulations

Before putting your spray drone into action, remember the product being used needs to be labeled for aerial application, and the label requirements for spray volume, droplet size and drift must still be followed. Roberts also recommends checking your state's specific requirements.

“The federal EPA has left this somewhat open with the states adding their own rules on this,” he says. “So, it'll always be a necessity to follow this rule of only using materials approved for aerial application and to verify that that particular state does not have any additional restrictions on that application.”

In drone applications, the rate of adjuvant used is dependent on the spray application volume applied. To determine the adjuvant delivered in ounces/acre, Roberts shares the following formula:

$$(128/\text{gallon}) (\text{gallons}/\text{Acre}) (\% \text{ by volume}) = \text{adjuvant in oz}/\text{acre}$$

(The Daily Scoop, January 16, 2024)

[https://www.thedailyscoop.com/news/retail-industry/helpful-tips-using-adjuvants-spray-drones?mkt\\_tok=ODQzLVIHQi03OTMAAAGQxe6tYMZ6\\_7Zqn93dkdyVKzT2V7jL41xrhF8IJUwexu3Tn04vUcNFdb\\_oJSR2uJvW\\_cgWtkbLx28tZhzi6CSu-fx2oS0-UhAhhXkSMQfvOrsojcpTrg](https://www.thedailyscoop.com/news/retail-industry/helpful-tips-using-adjuvants-spray-drones?mkt_tok=ODQzLVIHQi03OTMAAAGQxe6tYMZ6_7Zqn93dkdyVKzT2V7jL41xrhF8IJUwexu3Tn04vUcNFdb_oJSR2uJvW_cgWtkbLx28tZhzi6CSu-fx2oS0-UhAhhXkSMQfvOrsojcpTrg)

## STUDY FINDS TICK-REPELLING POTENTIAL IN THREE BOTANICAL COMPOUNDS

In the United States, vector-borne disease incidence has been increasing over the past two decades, with tick-borne disease [accounting for more than 75 percent](#) of all reported cases.

One of the key ways to avoid contracting a vector-borne disease is to personally protect yourself from ticks by checking frequently for ticks, using insecticide-treated clothing, and correctly applying repellents. Currently,

DEET represents more than 80 percent of all tick repellents in products found on store shelves in the U.S. Despite its strong safety record, DEET is one of the most commonly found chemicals in water, and its role in the environment has not yet been thoroughly studied. In the search for new options, a group of researchers at Iowa State University and the University of Wisconsin-Madison published a [new study last week in the \*Journal of Medical Entomology\*](#) that tested naturally derived tick repellents for their potential to protect us against these disease-carrying pests.

## Laboratory Testing

Naturally derived plant extracts have been tested for other medically important arthropods, namely mosquitoes, with varying levels of success. Wanting to expand the potential use of the putative repellents, the scientists in the lab of Joel Coats, Ph.D., at Iowa State University studied several commercially available plant-extract compounds for their ability to repel the blacklegged tick (*Ixodes scapularis*) and the American dog tick (*Dermacentor variabilis*).

One of the main pitfalls of using naturally derived plant extracts is that they only work for a short time. One way to extend their repellency is to attach them to other naturally derived chemical compounds. This provides a little more stability to the repellent, allowing it to repel ticks and mosquitoes a little longer. “We started with two natural [chemicals], and we joined them with a biodegradable chemical joining,” says Colin Wong, Ph.D., lead researcher on the laboratory repellency assays who is now a postdoctoral researcher with the U.S. Department of Agriculture's Agricultural Research Service in Byron, Georgia. The idea is that the new, semi-synthetic repellent will quickly biodegrade into its naturally derived component parts and potentially cause less environmental impact than other repellents currently on the market.

In an [earlier study published last fall in \*Advances in Arthropod Repellents\*](#), laboratory-reared ticks were dropped into the center of a petri dish container. Naturally, ticks will either try to escape the space or climb up the walls to seek hosts. However, to do either, the ticks in the study had to climb onto a piece of filter paper treated with a naturally derived repellent that was

placed in the dish. The longer it took the tick to venture onto the repellent-laden filter paper, the greater the repellent effect that the plant compound had on the tick.

In the end, the researchers found a few plant-derived compounds that were more repellent than others and warranted further testing. These compounds were synthetically created but are very similar to those naturally found in lavender and sage, geraniums and roses, and lemongrass and verbena.

### Field Trials

The next step, covered in the new study in the *Journal of Medical Entomology*, was to test these repellents in the field on wild ticks. The scientists in Coats' lab reached out to Susan Paskewitz, Ph.D., and members of her lab at the University of Wisconsin-Madison to design a way to test these promising repellents in the field.

Xia Lee, Ph.D., lead author on the study and now a public health entomologist with the Department of Health Services in Wisconsin, led a group of field technicians out to Big Eau Pleine County Park in Marathon County, Wisconsin, during the warm summer months of June and July when there are typically high numbers of tick nymphs questing for hosts in the thick vegetation.

Lee and his team carried with them long pieces of canvas cotton attached to dowels. They heavily sprayed one side of the cloth with one of the three naturally derived repellents, the industry standard DEET found commonly in tick repellents on store shelves, or the acetone control in which all of the repellents were diluted. (They also tested untreated cloth drags as a second control.)

Each repellent-laden canvas cloth drag was pulled through a stretch of vegetation, repellent side down, for 40 passes. The researchers quickly hung up the canvas so they could count and record all ticks to species. Then, they continued to observe ticks for a three-minute period and counted how many ticks detached within that period.

Most of the ticks observed were blacklegged tick nymphs, which was typical for the time of year they were testing. Surprisingly, none of the repellents

(including DEET) resulted in fewer ticks attached compared to controls at the time of the first count. But after the first count, the researchers noticed that the ticks began to detach quickly before the three-minute observation period was up. At a low concentration, DEET caused more ticks to detach within the three-minute window than the compounds derived from geraniums and verbena, but the compound derived from lavender had equal levels of tick detachment as DEET. At a high concentration, all repellents caused equal tick detachment, which was significantly greater than both the controls.

Despite this, there were still ticks remaining on the canvas drags after the observation period. Says Lee, “[This] speaks to risk in the real world. If ticks are still grabbing onto you, they may fall off. Only 70-80 percent of the ticks are falling off, so you still have 20 percent of ticks that are still attached after a three-minute period. There’s still a possibility that those ticks may fall off or move to an untreated area, like from your arm to your armpit area.” This is why it is important to frequently check for and remove ticks when working or recreating in an area with high levels of ticks.

So far, these naturally derived repellents show promise as repellents worth stocking on store shelves next to DEET. Before that, though, several further tests need to occur to ensure that these naturally derived compounds are non-toxic to humans and the environment and that the repellents work as well on human clothing and skin as they do on canvas cloth drags.

(PCT, January 24, 2024)

<https://www.pctonline.com/news/study-finds-tick-repelling-potential-in-three-botanical-compounds/>

## BAYER LOSES \$2.25B ROUNDUP VERDICT

A Philadelphia Court of Common Pleas jury awarded a Pennsylvania man \$2.25 billion in damages in a Roundup liability trial that wrapped up Jan. 26 in Pennsylvania.

A jury ruled that Bayer's glyphosate-based Roundup caused cancer in John McKivison, 49, a Lycoming County resident who used Roundup to kill weeds at his family's home for about 20 years. The jury also ruled Bayer was negligent and failed to warn consumers of the product's alleged dangers.

The \$2.25 billion in damages is among the largest award issued by a court in the Roundup cases.

Though Bayer has been ordered to pay many millions of dollars because of Roundup verdicts, the company has managed to have final damage amounts reduced by about 90% across all the cases.

In addition, Bayer has won 10 of the past 16 Roundup verdicts.

When contacted by DTN, Bayer said it believes it has several grounds for appealing the latest verdict.

"We disagree with the jury's adverse verdict that conflicts with the overwhelming weight of scientific evidence and worldwide regulatory and scientific assessments and believe that we have strong arguments on appeal to get this verdict overturned and the unconstitutionally excessive damage award eliminated or reduced," Bayer said in a statement.

"The company remains committed to taking cases to trial, as our track record demonstrates that we win when plaintiffs' attorneys and their experts are not allowed to misrepresent the worldwide regulatory and scientific assessments that continue to support the products' safety."

Bayer said the latest verdict was "at odds" with a recent decision by the U.S. District Court for the Eastern District of Louisiana. That court granted Bayer's motion for summary judgment in a similar Roundup case because plaintiffs "lacked reliable evidence" to prove their case.

According to the American Tort Reform Foundation, the Philadelphia court and the state's supreme court were found to be the top "Judicial Hellholes" in the country. The ATRF defines such courts as places where "judges systematically apply laws and court procedures in an

unfair and unbalanced manner, generally against defendants in civil lawsuits," according to the group's website.

Bayer told DTN the latest case was "marred by a number of significant errors" at trial.

"Plaintiff's counsel was permitted to conduct unrestrained cross-examination of company witnesses, including asking our experts prejudicial lines of questioning on documents they had never seen before, as well as questions on matters wholly irrelevant to the central issue in this case -- whether Roundup is carcinogenic," Bayer said in a statement.

"During trial, defendants moved for a mistrial after the court improperly sustained plaintiff's objections to the testimony of a company scientist and struck a large portion of the defendant's direct examination on topics directly relevant to the central issue in the case -- whether Roundup is carcinogenic."

In November 2023, a jury in Jefferson City, Missouri, awarded \$1.6 billion in punitive damages to four plaintiffs.

Also in November, the European Commission announced it would renew glyphosate's approval for 10 more years after EU member states were unable to reach a majority opinion on the extension.

In addition, the U.S. Court of Appeals for the Ninth Circuit found California's Proposition 65 warning for glyphosate to be unconstitutional, stating in its opinion, "IARC stands essentially alone in its determination that glyphosate is probably carcinogenic to humans, while EPA, OEHHA and regulators from around the world conclude that it is not."

In 2015, the World Health Organization cancer research agency concluded glyphosate was "probably carcinogenic" to humans. That conclusion stands in contrast to many agencies around the world, including the EPA that classifies the chemical as non-carcinogenic.

(Progressive Farmer, January 30, 2024)

<https://www.dtnpf.com/agriculture/web/ag/crops/article/2024/01/30/philadelphia-court-awards-2-25>



## **CONTROVERSIAL HERBICIDE TIED TO PARKINSON'S GETS GREEN LIGHT FROM EPA FOR CONTINUED USE**

At the request of farmworkers and environmentalists, the Biden administration agreed in 2022 to reconsider its 15-year re-approval of paraquat, a widely used herbicide that studies have linked to Parkinson's disease. But the Environmental Protection Agency now says its review supports paraquat's continued use.

Paraquat has "high benefits for numerous crops" including cotton, soybeans, peanuts, bulb vegetables and vineyards, the EPA said in a preliminary report issued Tuesday. While studies have shown some risk of Parkinson's disease in animals subjected to high doses of the herbicide, the agency said, research does not indicate that amounts applied to crops will cause the illness in humans.

There are still some potential health hazards from inhalation or skin contact with paraquat, but "EPA concluded that these risks were outweighed by the benefits," the report said. It said further protective measures would be imposed, including increased buffer zones around spray sites and limits on aerial spraying, and additional information would be reviewed in a final report due next January.

The announcement infuriated environmental advocates who had challenged the administration's decision to allow continued use of the weed-killing chemical.

"This is EPA's opportunity to accept the science and protect farmworkers from Parkinson's disease. Instead, it is doubling down on its past mistakes and leaving farmworkers and agricultural communities at risk," said Jonathan Kalmuss-Katz, an attorney with the nonprofit Earthjustice.

"The science is clear that this highly lethal pesticide threatens all living things, including our country's wildlife," said Nathan Donley, environmental health science director at the Center for Biological Diversity. "The EPA should follow the lead of nearly every other

major agricultural country in the world and ban this dangerous stuff for good."

In response to the criticism, Jeffrey Landis, an EPA spokesperson, said Wednesday that "protecting public health and the environment is EPA's top priority, and the agency's process for evaluating pesticides reflects our steadfast commitment to reducing exposures and protecting the safety of impacted communities." He said the agency has reviewed hundreds of scientific studies and will continue its research before the final report.

Parkinson's disease is a debilitating nervous system disorder that causes tremors, slowness and stiffness. Among those opposing the EPA's approval of paraquat was the Michael J. Fox Foundation for Parkinson's Research, founded by the "Back to the Future" star, who was diagnosed with Parkinson's at age 29 in 1991.

While groups challenging paraquat's use say numerous studies have found a connection between the herbicide and Parkinson's disease, the EPA's report this week said those studies "had numerous limitations or deficiencies" and were based on injections of chemicals into animals rather than exposure by inhalation or skin contact.

Paraquat is one of the nation's most commonly used herbicides, particularly in California and some Midwestern states, where its application has doubled in the past decade. It is approved only for commercial use and not for homeowners and has been sold in the U.S. since 1964.

The chemical is banned, however, in at least 32 countries, including China — whose government owns Syngenta, paraquat's principal manufacturer — and much of the European Union.

The EPA under President Donald Trump proposed in 2020 to renew U.S. registration of paraquat for 15 years, the renewal period set by law, but also proposed banning nearly all aerial spraying of the herbicide. President Joe Biden's EPA director, Michael Regan, approved the 15-year renewal in August 2021 and went further by allowing aerial use in most agricultural areas, while requiring buffer zones of 50 to 75 feet around residential communities.

The agency agreed to reconsider its approval in September 2022 after environmental and farm labor groups filed objections with the 9th U.S. Circuit Court of Appeals in San Francisco.

In the 1970s, the U.S. government sponsored a controversial program to spray paraquat on marijuana fields in Mexico in an attempt to eradicate the plants. (San Francisco Chronicle, January 31, 2024)  
<https://www.sfchronicle.com/politics/article/epa-ok-s-use-controversial-herbicide-paraquat-18640453.php>

## USDA FINDS TOLPYRALATE HERBICIDE HAS SURPRISING EFFECT ON SOME CORN VARIETIES

A team of Agricultural Research Service, university, and industry scientists has spotted a new genetic vulnerability to tolpyralate herbicide in 49 varieties of corn, marking the first report of weed control posing a danger to the staple crop.

The finding, reported in the journal [\*Pest Management Science\*](#), will enable farmers to avoid crop losses, such as by choosing a tolpyralate-tolerant variety or by using a different herbicide product.

According to Marty Williams, an ecologist with the ARS Global Change and Photosynthesis Research Unit in Urbana, Illinois, tolpyralate was registered in 2017 and labeled for use in fallow fields and on all types of field-, pop- and- sweet corn. It belongs to a class of herbicides known as HPPD (4-Hydroxyphenylpyruvate dioxygenase) inhibitors.

When applied as a post-emergent herbicide, tolpyralate triggers a biochemical chain of events in targeted weeds that initially causes bleached-appearing leaves and then ultimately plant death.

Normally, corn plants can quickly metabolize HPPD inhibitor herbicides before they inflict the same kind of harm. The process depends on the presence or absence

of certain types of alleles (alternate gene copies) in a region of their genome known as *NSFI*.

One way that corn breeders check for the alleles during evaluations of new candidate varieties is to spray them with nicosulfuron. It is an acetolactate synthase enzyme-inhibiting herbicide that can also serve as a reliable indicator of a variety's sensitivity to several types of post-emergence herbicides, including most ALS and HPPD inhibitors. As it turns out, however, spraying nicosulfuron isn't a reliable indicator of corn tolerance to tolpyralate.

That's what Williams and his collaborators from the University of Wisconsin-Madison and Illinois Foundation Seed Inc. learned after conducting a series of greenhouse, field, and laboratory tests using genetic mapping techniques. They began their investigation in late summer 2021 after a corn breeder's report that spraying tolpyralate onto a sweet corn inbred line called XSEN187 had severely damaged all plants.

But instead of the alleles they expected to see, the team traced the sweet corn inbred line's tolpyralate sensitivity to a cluster of genes residing on a unique region of chromosome 5. This was confirmed by the alleles' association with visible tolpyralate damage in two populations of offspring plants that were derived from crosses between the sweet corn inbred and two tolerant corn lines.

The researchers expanded the scope of their investigation, ultimately identifying tolpyralate sensitivity in a total of six types of field corn and 43 types of sweet corn. Additional screening is likely to detect the trait in other varieties as well. Consider the case of the inbred line IL677a, which was used to introduce the widely popular sugary enhancer gene to sweet corn. In tests, the line proved severely sensitive to tolpyralate, raising the possibility that this sensitivity was also widely introduced into sweet corn along with the sugar enhancer trait.

Importantly, the researchers also showed that tolpyralate sensitivity in the corn lines they evaluated is contingent upon exposure to oil-based adjuvants, additives that are mixed into herbicide tanks before application. However, removing them isn't an option, Williams noted. The

adjuvants are key to ensuring the herbicide is absorbed into the leaves of targeted weeds, killing them more effectively.

How exactly the newly identified gene or genes on chromosome 5 make these varieties vulnerable to harm from tolpyralate hasn't been figured out yet. "We need a greater understanding of the physiological mechanism so that the manufacturer and seed companies can reduce the risk of crop injury, such as by improving crop tolerance to the herbicide," Williams said. "Moreover, the research may have application beyond tolpyralate, because several new HPPD-inhibiting herbicides are being developed from the same pyrazole ring scaffold as tolpyralate."

## CEU Meetings

Please note that some of these meetings are virtual using Zoom or Microsoft Teams. Please contact the meeting host directly if you have any questions.

### **Date: February 22, 2024**

Title Oklahoma State University Pecan Pest Management Workshop

Location: Gordon Cooper Technology Center, Shawnee

Contact: Becky Carroll (405) 744-6139

<https://extension.okstate.edu/announcements/oklahoma-pecan-management/2024-pecan-pest-management-workshop.html>

CEU's:	Category(s):
5	Private
5	1A
5	10

### **Date: March 6, 2024**

Title OKVMA SPRING 2024 Conference

Location: Champion Convention Center OKC

Contact: Kiersten Riggs (918) 314-9032

<https://okvma.com/conferences/>

CEU's:	Category(s):
1	A
2	1A
2	2
3	3A
1	4
2	5
6	6
1	7A
1	7B
1	7C
1	8
6	10
1	13

**Date: March 7, 2024**

Title Vesperis 2024 Annual CEU Workshop  
Location: Stoney Creek Hotel Broken Arrow  
200 W Albany St, Broken Arrow, OK 74012  
Contact: Deb Chambers (918) 622-2048 or email  
[chris.marinelli@veseris.com](mailto:chris.marinelli@veseris.com)

CEU's:                   Category(s):  
2                           3A  
2                           7A  
1                           7B  
4                           10

**Date: June 4, 2024**

Title Oklahoma State University 2024 Cross Timbers  
Forest & Range Management Field Day  
Location: Contact for Location  
Contact: Ryan DeSantis (405) 744-5463

CEU's:                   Category(s):  
3                           2  
3                           10

**Date: March 27, 2024**

Title ENSYSTEX 2024 Workshop  
Location: Holiday Inn 613 University Place Durant OK  
Contact: Don Stetler (281) 217-2965  
<https://ceuworkshop.com/>

CEU's:                   Category(s):  
3                           3A  
3                           7A

**Date: October 1, 2024**

Title ENSYSTEX 2024 Workshop  
Location: TBA Tulsa OK  
Contact: Don Stetler (281) 217-2965  
<https://ceuworkshop.com/>

CEU's:                   Category(s):  
1                           7A

**Date: May 10, 2024**

Title Oklahoma State University Southeast Oklahoma  
Forest Health Workshop  
Location: Contact for Location  
Contact: Ryan DeSantis (405) 744-5463

CEU's:                   Category(s):  
3                           2  
3                           10

## ODAFF Approved Online CEU Course Links

### Online Pest Control Courses

<https://www.onlinepestcontrolcourses.com/>

### PestED.com

<https://www.pested.com/>

### Certified Training Institute

<https://www.certifiedtraininginstitute.com/>

### WSU URBAN IPM AND PESTICIDE SAFETY EDUCATION PROGRAM

<https://pep.wsu.edu/rct/recertonline/>

### CEU University

<http://www.ceuschool.org/>

### Technical Learning College

<http://www.abctlc.com/>

### All Star Pro Training

[www.allstarce.com](http://www.allstarce.com)

### Wood Destroying Organism Inspection Course

[www.nachi.org/wdocourse.htm](http://www.nachi.org/wdocourse.htm)

### CTN Educational Services Inc

[http://ctnedu.com/oklahoma\\_applicator\\_enroll.html](http://ctnedu.com/oklahoma_applicator_enroll.html)

### Pest Network

<http://www.pestnetwork.com/>

### Veseris

<http://www.pestweb.com/>

### AG CEU Online

<https://agceuonline.com/courses/state/37>

### Target Specialty Products Online Training

<https://www.target-specialty.com/training/online-training>

### MarKev Training <https://www.markevtraining.com/>

For more information and an updated list of CEU meetings, click on this link:

<http://www.kellysolutions.com/OK/applicators/courses/searchCourseTitle.asp>

## ODAFF Test Information

Testing will be done at testing centers in multiple locations around the state by PSI Services LLC.

For more information and instructions, please go to <https://bit.ly/3sF4y0x>.

**Reservation must be made in advance** at [www.psiexams.com/](http://www.psiexams.com/) or call **855-579-4643**

### PSI locations.

Oklahoma City 3800 N Classen Blvd, Ste C-20, Oklahoma City, OK 73118

Tulsa 2816 East 51st Street, Suite 101, Tulsa, OK 74105

McAlester 21 East Carl Albert Parkway (US Hwy 270), McAlester, Oklahoma 74501

Woodward 1915 Oklahoma Ave, Suite 3, Woodward, OK 73801

Lawton Great Plains Technology Center, 4500 West Lee Blvd Building 300- RM 308, Lawton, OK 73505

Enid Autry Technology Center, 1201 W. Willow Rd, Enid, OK 73703

Ponca City Pioneer Technology Center, 2101 N Ash, Ponca City, OK 74601

If you have questions on pesticide certification. Please email or call:

Kevin Shelton  
405-744-1060 [kevin.shelton@okstate.edu](mailto:kevin.shelton@okstate.edu) or

Charles Luper  
405-744-5808 [charles.luper@okstate.edu](mailto:charles.luper@okstate.edu)

**Pesticide Safety  
Education Program**