

# PESTICIDE REPORTS

Division of Agricultural Sciences and Natural Resources • Oklahoma State University

<http://pested.okstate.edu>



## November, 2023

## CHEM

- 1 2023 APPLICATOR RENEWALS
- 2 EPA FINALIZES REVISIONS TO THE EPA PLAN FOR THE FEDERAL CERTIFICATION OF APPLICATORS OF RESTRICTED USE PESTICIDES WITHIN INDIAN COUNTRY
- 3 EPA REBUILDS ENDOCRINE DISRUPTOR SCREENING PROGRAM TO BETTER ASSESS HUMAN ENDOCRINE EFFECTS OF PESTICIDES
- 4 EPA ISSUES ADVANCED NOTICE OF PROPOSED RULEMAKING FOR PUBLIC COMMENT TO SEEK ADDITIONAL INFORMATION ON USE OF PESTICIDE TREATED SEED AND PAINT
- 5 ESA HERBICIDE STRATEGY DRAWS AG'S IRE
- 8 ANTS EXHIBIT BEHAVIORAL AND PHYSIOLOGICAL CHANGES AS A RESULT OF DEVELOPMENT, URBAN SPRAWL, RESEARCH SHOWS
- 10 INFECTIOUS DISEASE EXPERTS CONCERNED ABOUT POTENTIAL YELLOW FEVER RETURN
- 10 NOT ALL CHEMICALS STORE THE SAME OVER WINTER
- 12 CEU MEETINGS
- 13 ONLINE CEU LINKS
- 13 ODAFF TEST INFORMATION

### 2023 APPLICATOR RENEWALS

Applicators in 1a Ag Plant, 15 Aerial, 7b Structural, 10 Demonstration and Research and 16 Private Applicator must make sure they renew their certifications by December 31, 2023.

Applicators that have reached the required Continuing Education Units (CEUs) must complete certification by paying the \$50 recertification fee before December 31, 2023 to continue their certification.

Applicators that choose not to recertify by CEUs must re-test in their category by taking the exam before December 31, 2023, to continue their certification into the next cycle.

Testing must be done at a PSI test center. More information and links to sign up for testing can be found here. <https://extension.okstate.edu/programs/pesticide-safety-education/odaff-pesticide-applicator-testing-procedure/> (OSU PSEP November 1, 2023)

# EPA FINALIZES REVISIONS TO THE EPA PLAN FOR THE FEDERAL CERTIFICATION OF APPLICATORS OF RESTRICTED USE PESTICIDES WITHIN INDIAN COUNTRY

Today, the U.S. Environmental Protection Agency (EPA) is strengthening the protection of human health and the environment and reaffirming its commitment to environmental justice in Indian country. Specifically, EPA has finalized revisions to the [EPA Plan for the Federal Certification of Applicators of Restricted Use Pesticides within Indian Country](#) (EPA Plan) to conform to the 2017 Certification of Pesticide Applicators (CPA) rule.

In 2017, EPA updated the CPA rule, setting stronger standards for people who apply restricted use pesticides (RUPs). RUPs are the most acutely toxic pesticides or those needing to be applied with special care. RUPs can be used only by certified applicators or individuals under a certified applicator's direct supervision, not by the general public. Applicators are certified by states, tribes, or federal agencies with an EPA-approved certification plan.

The 2017 CPA rule requires that entities, wishing to continue administering certifications to RUP applicators, submit new conforming plans to EPA for approval. Key revisions to the CPA rule include establishing a minimum age for certified applicators and noncertified applicators under the direct supervision of certified applicators, strengthening competency standards, and requiring greater recordkeeping for commercial applicators and RUP retail dealers.

This newly approved EPA Plan replaces a 2014 version to allow for the continued certification of commercial and private pesticide applicators for areas of Indian country that do not have their own specific tribal EPA-approved program, except where a tribe has opted out of the 2023 EPA Plan. The EPA Plan fills a gap whereby certified applicators in Indian country can have legal

access to the same RUPs available elsewhere in the United States. Under the EPA Plan, the Agency issues federal certifications to commercial and private applicators to use or supervise the use of RUPs. Tribes may impose additional restrictions or requirements on the use of RUPs through tribal codes, laws, regulations, or other tribal procedures, but are not the entities that issue certifications for individual applicators under the EPA Plan.

Under the EPA Plan, certified commercial applicators who are seeking to apply RUPs in designated Indian country can use an underlying certification issued by a federal, state, or tribal entity with an EPA-approved certification plan and then submit a completed application form that includes a copy of the underlying certification. Private applicators, who may only apply RUPs for agricultural production on their owned or rented property or without compensation in Indian country that falls under the EPA Plan, have the option to either have an underlying certification from a state or tribe with an EPA-approved certification plan, or to become certified by completing an EPA-administered training directly.

Federally recognized tribes have the [option](#) to administer their own certification plan, which must be approved by EPA, or enter into an agreement with EPA to use the certification of another certifying authority (another state or tribal entity) instead of being covered by the EPA Plan. Tribes currently under the 2014 EPA Plan do not have to do anything to remain covered by this revised EPA Plan. Tribes that have their own certification plans are [listed on EPA's webpage](#). If tribes do not want or need RUPs to be applied in their land, they have the option to opt-out of the revised EPA Plan, meaning RUPs will generally be prohibited on that tribe's area of Indian country.

Upon publication of the Federal Register notice, the revised EPA Plan will be available in docket [EPA-HQ-OPP-2011-0037](#) and [EPA-HQ-OPP-2022-0509](#) at [www.regulations.gov](http://www.regulations.gov).

To read more about the EPA Plan, visit [EPA's website](#). EPA continues to approve other state, tribal, and federal plans and has currently approved 63 of 68 submitted plans. EPA will continue to update [its website](#) on a more

frequent basis as plans continue to be approved. (EPA, October 4, 2023)  
<https://www.epa.gov/pesticides/epa-finalizes-revisions-epa-plan-federal-certification-applicators-restricted-use>

## **EPA REBUILDS ENDOCRINE DISRUPTOR SCREENING PROGRAM TO BETTER ASSESS HUMAN ENDOCRINE EFFECTS OF PESTICIDES**

Today, the U.S. Environmental Protection Agency (EPA) is announcing a [strategic plan](#) to ensure that its assessments of pesticides more closely, quickly, and effectively evaluate the potential for endocrine effects in humans. These strategies will also improve EPA’s ability to protect against those effects as part of its pesticide decisions under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and to implement the Endocrine Disruptor Screening Program (EDSP) under section 408(p) of the Federal Food, Drug, and Cosmetic Act (FFDCA).

“This plan is a major milestone in our efforts to ensure that pesticide decisions continue to protect human health,” said **Deputy Assistant Administrator for Pesticide Programs for the Office of Chemical Safety and Pollution Prevention Jake Li**. “Starting with our highest priority chemicals, EPA will communicate more transparently our endocrine findings for humans, pulling from existing data when possible, and requesting new data when necessary to evaluate potential estrogen, androgen, and thyroid effects.”

[Endocrine systems](#), also referred to as hormone systems, are found in all mammals, birds, fish, and many other living organisms. The systems regulate many biological processes in the body from conception through adulthood and into old age, including the development of the brain and nervous system, the growth and function

of the reproductive system, and metabolism and blood sugar levels.

Endocrine disruptors are chemicals that mimic, block, or disrupt the normal function of hormones. Following the 1996 amendment of FFDCA, EPA established EDSP to evaluate how pesticides and other chemicals may affect estrogen, androgen, and thyroid systems. Since then, EPA has encountered several challenges with implementing EDSP. For example, the Agency has historically lacked scientific methods to rapidly and cost-effectively test thousands of chemicals for endocrine-disrupting effects. Further, EPA’s FIFRA decisions rarely explained whether or how they fully obtained all needed endocrine data or complied with FFDCA by protecting humans from potential endocrine effects. EPA staff also received minimal support and direction from leadership in the last Administration to implement EDSP. Because of these and other issues, the Office of Inspector General issued a report in 2021 concluding that the Agency had made limited progress in implementing EDSP and recommending, among other things, that the Agency develop an EDSP strategic plan.

The strategic plan and supporting documents released today advance EDSP in several unprecedented ways.

**EPA will use its FIFRA process to obtain endocrine data and make endocrine decisions for human health.** Going forward, EPA will use its existing FIFRA data collection authorities to obtain the data it needs to make both FIFRA and EDSP decisions on whether the pesticide impacts the human estrogen, androgen, and thyroid systems, and will require any needed protections. Given the large number of pesticides awaiting these decisions, EPA is prioritizing the approximately 400 conventional pesticide active ingredients that are being registered for the first time or undergoing [registration review](#).

**EPA will make endocrine decisions related to human health more expeditiously by using existing data when possible.** EPA routinely obtains data under FIFRA that are identical or comparable to data that EPA would have obtained through EDSP. Additionally, other existing studies may also inform EDSP findings. Where these data are sufficient to support EDSP findings under

FFDCA, EPA will make those findings without seeking additional data. This minimizes duplicative and expensive animal testing and expedites EPA's ability to make those findings without waiting for new studies. To support the strategic plan, EPA is releasing a science paper that addresses longstanding questions about which types of existing data can inform endocrine findings under FIFRA and FFDCA.

After evaluating available data for 403 conventional pesticides, EPA has determined it has adequate estrogen and androgen data for 86 of these chemicals. Thus, as part of registration review, after assessing for potential thyroid effects, EPA can make final EDSP decisions on the potential for these chemicals to impact the human estrogen, androgen, and thyroid systems. Similarly, EPA has determined it has sufficient data for 52 pesticide chemicals (50 conventional active ingredients and two inert ingredients) it prioritized in 2009 to assess the potential for these chemicals to impact the human estrogen, androgen, and thyroid systems. Now, as a supplement to the strategic plan, the Agency is communicating its final EDSP decisions relating to impacts on the human estrogen, androgen, and thyroid pathways for these 52 chemicals.

Because the science on the human endocrine system evolves constantly, especially for thyroid, EPA anticipates seeking in 2025 scientific peer review on scientific advancements and on its current approach to thyroid assessments. The Agency will then determine whether to update its approach.

**In the near-term, EPA will require additional endocrine data for human health for 30 pesticides.** EPA has identified 30 high-priority pesticides that require additional data on potential human estrogen and/or androgen effects. These pesticides are considered high priority because preliminary data indicate the chemicals may cause activity in the endocrine system. EPA is seeking available data or information on these chemicals for 60 days as part of a public comment period. Additionally, to fill any remaining data gaps, the Agency intends to issue FIFRA human health data requests for these chemicals in the spring of 2024. EPA is also seeking available data or other information to evaluate endocrine data needs for a second group of 126 conventional pesticides for which

the Agency's initial analysis has found limited endocrine data. For 161 additional conventional pesticides, the Agency will determine which ones it needs to obtain updated endocrine data for in the coming years as part of registration review.

The comment period for this action will open Friday, October 27. Once available, interested parties can submit data or a comment in docket EPA-HQ-OPP-2023-0474 at [www.regulations.gov](http://www.regulations.gov). (EPA, October 26, 2023) <https://www.epa.gov/newsreleases/epa-rebuilds-endocrine-disruptor-screening-program-better-assess-human-endocrine>

## **EPA ISSUES ADVANCED NOTICE OF PROPOSED RULEMAKING FOR PUBLIC COMMENT TO SEEK ADDITIONAL INFORMATION ON USE OF PESTICIDE TREATED SEED AND PAINT**

The U.S. Environmental Protection Agency (EPA) is issuing an [advanced notice of proposed rulemaking \(ANPRM\)](#) for public comment to seek additional information on the use of pesticide-treated seed and paint products. In particular, EPA is looking to better understand whether or to what extent pesticide-treated seed and paint need to be further regulated. Based on the Agency's findings, EPA may pursue a rule or take administrative action to address any issues with the use of pesticide-treated seed and paint. Comments can be submitted to docket [EPA-HQ-OPP-2023-0420](#) at [www.regulations.gov](http://www.regulations.gov) for the next 60 days.

### **Background**

Pesticide-treated seeds have been treated by pesticides such as fungicides, insecticides and nematicides prior to use to protect them from diseases, insects, or other pests that could harm a crop.

Pesticide-treated paints are treated with antimicrobial pesticides to preserve liquid paint and to protect dried paint from mold and/or algae growth.

These products are exempt from registration requirements under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) if they meet the exemption criteria pursuant to a regulation known as the [Treated Article Exemption](#). Rather than registering treated seed or paint under FIFRA, EPA requires registration of the pesticide that is used to treat the seed or paint (known as the “treating pesticide”). During the pesticide registration and registration review process, the agency completes comprehensive human health and ecological risk assessments to ensure that use of the pesticides—including use of the treated seeds and paints—will not cause unreasonable adverse effects to human health or the environment.

However, states and other stakeholders have raised questions about the clarity and enforceability of instructions specifically relating to use of the treated seed products (i.e., instructions relating to the storage, planting, and management of the treated seed). And, in April 2017, the Center for Food Safety (CFS) [filed a petition](#) with EPA that asked the Agency to interpret or amend the Treated Article Exemption so that it does not cover seeds treated with systemic pesticides, and to aggressively enforce registration and labeling requirements for such treated seeds. EPA denied the petition in September 2022, but its response mentioned its intent to issue this ANPRM and to explore the option of a rulemaking to regulate the use of treated seed. EPA is also using this ANPRM to consider requiring labeling instructions on treated paint products. The labeling would address potential risks of concern for professional painters who do not use personal protection equipment when applying treated paint.

### ANPRM Details

EPA is seeking comment on:

- how growers manage treated seed products, including how they store, plant, and dispose of these products;
- the extent to which treated seed products are used in the United States;

- whether or to what extent treated seed products are being distributed, sold, and used contrary to treating pesticide and seed bag tag labeling instructions;
- whether label language recently proposed for use of paint products treated with [diuron](#)—which may be proposed for other treated paint products—should be made enforceable, and if not, whether other regulatory or administrative options should be considered;
- whether those who manufacture treated seed and paint should be subject to some registration and reporting requirements under FIFRA section 7 or other requirements (e.g., filing of a “notice of arrival” for all imported treated products; and
- whether further regulatory or administrative measures are appropriate to ensure the safe use of treated seed and paint.

After reviewing public comments, EPA will consider further actions, which may include regulations to limit the scope of the regulatory Treated Article Exemption, enforcing use violations, and taking administrative action to clarify labeling requirements or reduce the use of a treating pesticide.

To comment on the ANPRM, visit [EPA-HQ-OPP-2023-0420](#) at [www.regulations.gov](http://www.regulations.gov). (EPA, October 12, 2023) <https://www.epa.gov/pesticides/epa-issues-advanced-notice-proposed-rulemaking-public-comment-seek-additional>

## ESA HERBICIDE STRATEGY DRAWS AG'S IRE

An extended 30-day comment period on EPA's draft herbicide strategy for endangered species ended on Oct. 22, and farmers and other experts in agriculture took the added time to vent to the agency.

In July, the EPA released the strategy framework of a plan the agency said will help compliance with the Endangered Species Act as it relates to herbicides, after decades of legal battles.

EPA initially granted a 60-day comment period and then extended it by 30 days to Oct. 22.

On Sunday, a group of 226 ag interest groups and businesses both on the national and state level, submitted comments to EPA. The national groups include the likes of the Agricultural Retailers Association, American Farm Bureau Federation, National Cattlemen's Beef Association, National Association of Wheat Growers, American Soybean Association, among others.

"This complex, unworkable proposal would result in significant new, costly regulatory burdens for millions of U.S. agricultural producers," the groups said.

"Others would simply be unable to comply with the proposal, undermining their continued access to herbicides. As a result, we are concerned this proposal could jeopardize the continued viability of farming operations across the United States.

"We understand EPA has legal obligations related to the Endangered Species Act and support the agency meeting its statutory requirements. Further, we recognize EPA has committed itself to an aggressive timetable via court settlement for implementing the herbicide strategy and other ESA-related pilots and strategies. However, if implemented as proposed, the herbicide strategy would be disastrous for U.S. farmers and our rural communities."

The American Soybean Association also submitted a separate letter signed by nearly 1,500 farmers who called on the EPA to scrap the proposal.

"For many producers there are not sufficient options to comply with the proposal, while for others it would impose significant costs on their operations," the farmers said in the comment letter.

"This will not only harm our nation's rural communities but will also negatively affect the U.S. and global consumers who rely on our ability to produce affordable and sustainable food, fuel, fiber and other goods. We strongly urge EPA to withdraw this complicated, harmful, and unworkable strategy."

The strategy in part calls for, among other things, farmers and other landowners to implement mitigation measures depending on their geographic location and proximity to endangered species.

The mitigation measures are intended to reduce spray draft, runoff and soil erosion. They would be required to be implemented for proximity to endangered species and/or their designated critical habitats.

Instead of requiring a certain number of mitigation measures, the EPA herbicide strategy outlines a system where herbicide users need to achieve a minimum number of "efficacy points."

EPA assigned one to three points to each option in its menu of mitigation measures. The number of points required will vary based on the herbicide and the field location. As many as nine points may be required of some products if the use occurs within a pesticide use limitation area.

The ASA farmers letter said the strategy was "incredibly complex" and would be "difficult for individual producers and applicators to even determine if lands are under regulation" or what their compliance obligations will be.

That complexity, the farmers said in the letter, could make it difficult to continue to combat the proliferation of weeds.

"If not properly managed, weeds can cause catastrophic yield losses and even total crop failure," the farmers said.

"However, we are greatly concerned the herbicide strategy as proposed would significantly undermine producer access to herbicides and their important production and environmental benefits."

One of the major concerns for ASA farmers is they say the proposed strategy is too prescriptive on implementing conservation practices that could benefit endangered species.

"Most of the runoff reduction practices EPA offers are not suitable for certain regions or crop types, leaving many producers simply unable to comply," the letter said.

"For individual producers with sufficient compliance options, the practices proposed can be very costly and might require the annual investment of millions of dollars across hundreds or thousands of their acres to continue using herbicides."

Also, in comments to the agency, Iowa Secretary of Agriculture Mike Naig said he was concerned about the EPA mandating certain conservation practices as a remedy.

The state of Iowa has come under scrutiny in the past decade for implementing a statewide voluntary conservation plan to address nutrients runoff from farms.

Naig said that program has been successful because it is voluntary.

"Iowa has seen tremendous interest and participation in our conservation programs, which are voluntary, non-regulatory, and which are proven to be successful at reducing the amount of nutrients that ultimately make their way into the Gulf of Mexico -- a goal we share with the EPA," Naig said in the letter.

"I fear that this new regulatory approach will have a chilling effect on the positive relationship and trust that we have built with Iowa farmers. We do not want to lose the momentum and progress that we have built at a time when we are scaling up and accelerating our state efforts to get more practices on the ground."

Naig asked the agency to consider the economic effects he said the plan could have on agriculture in particular and in rural areas in general.

"Impacted stakeholders are likely to see significant costs both monetarily and in terms of time required to comply with the new regulations," Naig said in the letter.

"EPA should conduct an economic analysis to determine these costs and better understand how this decision will

impact applicators and regulatory officials tasked with enforcing the changes."

Otis Howe, executive director of the Arkansas Crop Protection Association, told the agency the strategy would "impose huge regulatory burdens on nearly every herbicide user" in his state.

In a comment letter to the EPA, Howe said many Arkansas producers could "simply not be able to comply with the proposal, while others would face significant cost increases" on their farms.

Howe said his association believes the biggest problem with the proposal has to do with endangered species themselves.

"Very little data or knowledge of their actual locations or presence of their habitat exists," he said.

"This strategy would be much more effective if we had a better grasp on the locations of endangered species, then effects on those specific locations could be minimized."

Like other commenters, Howe called the strategy "incredibly complex" and that it would be difficult for individual producers to determine if certain lands are under regulation or what exactly compliance obligations would be.

"Many of the exemptions EPA proposes are not practical and will apply to few agricultural lands, leaving most under regulation even if herbicide use at those sites does not pose a genuine risk to endangered species," he said in the letter.

"Broad-brush regulation does not work for everyone. This herbicide strategy does not account for variability based on farm location."

Doug Miyamoto, director of the Wyoming Department of Agriculture, said in a letter to the agency that the strategy raises many concerns for farmers and ranchers in the West.

In particular, he said states like Wyoming have concern that the strategy will lead to more weeds and increased wildfire risks and added burdens to farmers who use both public and private lands for livestock grazing.

"Cheatgrass outcompetes almost all native habitat if not treated on a landscape level," Miyamoto said in a letter to the agency.

"Not only does cheatgrass outcompete native flora, it also creates the opportunity for devastating fires and the spread of annual invasive species to occur. Herbicide treatments for cheatgrass and other annual invasive grasses is a necessary tool used by livestock producers to reestablish native rangelands and habitat. The framework restricts opportunities to treat and thus encourages the spread of annual invasive grasses, which will in turn reduce habitat for all wildlife."

Robyn Stewart, an Extension agent at the University of Georgia, said the strategy suffers from a lack of information about species' locations.

Without accurate maps, she said, the strategy would harm agriculture while not necessarily protecting species.

"Therefore, in order to protect both listed species and our family farms," Stewart wrote in comments, "identifying the exact locations of listed species, habitats and agriculture fields potentially treated with a pesticide allows for a scientific determination of the exact locations of 'sensitive sites' where protections may be needed. Currently, the process of using outdated range maps or maps based on historical habitat/populations is flawed and unacceptable."

Stewart said the University of Georgia and the U.S. Fish and Wildlife Service have developed a protocol to identify where species' habitats and farm fields overlap.

"Georgia's ESA pilot program research documents that to protect two salamander species from Enlist Duo, mitigation measures should be considered on less than 3,526 field acres," Stewart said.

"The current restriction for Enlist Duo prevents its use on 951,557 acres, a restriction lacking scientific merit.

When considering the potential impacts to agriculture and the livelihoods that depend on the ability to use pesticides on their farms to protect their yields, it is critical that accurate, scientifically sound information is used to determine where restrictions are needed and where they are not.

"The current loss of both family farms and agricultural land is highly alarming when considering our nation's security and the need to feed and clothe a growing world's population. Overly aggressive regulations lacking scientific merit will not further steward pesticides." (Progressive Farmer, October 23, 2023) <https://www.dtnpf.com/agriculture/web/ag/crops/article/2023/10/23/hundreds-farmers-tell-epa-scrap>

## **ANTS EXHIBIT BEHAVIORAL AND PHYSIOLOGICAL CHANGES AS A RESULT OF DEVELOPMENT, URBAN SPRAWL, RESEARCH SHOWS**

Research by Texas A&M AgriLife Research scientists in the Texas A&M Department of Entomology showed a common ant species undergoes physiological and behavioral changes in unnatural settings.

"Consistent signatures of urban adaptation in a native, urban invader ant *Tapinoma sessile*," published in *Molecular Ecology*, included work by principal author Alexander Blumenfeld, a former graduate research assistant; Ed Vargo, Ph.D., senior investigator and Endowed Chair of Urban and Structural Entomology; Anjel Helms, Ph.D., a chemical ecologist and assistant professor; and Pierre-André Eyer, postdoctoral research associate, all in the Department of Entomology.

"Urbanization is a growing habitat around the world, and it's becoming more important for organisms to develop ways to live when their natural settings are disturbed," Vargo said. "Studies like this look at important questions regarding this change, 'Can they adapt to urban environments and how?'"



## **Environment influences ants behavioral, chemical changes**

The study focused on *Tapinoma sessile*, a relatively small ant species commonly known as the house ant or sugar ant. It is the most common house-invading ant across the U.S.

In its native environment, the house ant creates small, single-queen colonies typically found under leaf litter, rocks and logs, Vargo said. But in suburban/urban settings, these house ants build ever-expanding multi-queen colonies around man-made structures such as sidewalks, plant containers and landscape mulching.

Vargo said the study provides a broad range of scientific application related to biological and behavioral change spurred on by environmental conditions throughout the animal kingdom. It also could provide insights into how invasive species interact with environments new to them.

“The change is very similar to invasive ants once they move from their native range to an invasive range,” he said. “The idea is to better understand this syndrome in an ant species that can take a small, inconspicuous colony that then becomes an economic and ecological problem when damaging colonies get larger and larger.”

## **Answering questions about adaptive evolution**

Odorous house ants were observed and analyzed in natural and disturbed locations around the country including Indiana, Arkansas, Colorado and California.

The team analyzed the ant’s chemistry, such as hydrocarbons, genetic makeups of colonies and behaviors, such as aggression toward familial and outsider ants, and found stark differences based on the environment, Vargo said.

The study found that house ants in urban and natural areas showed adaptations that resulted in genetic concentration. Vargo said house ant queens in their natural habitat typically leave the colony they were born in, fly to another suitable location and attempt to establish a new colony. Queens in urban colonies stay in the nest and expand the colony rather than leave.

As a result, urban queens were closely related and less aggressive toward ants with genetic relation. Behavioral analyses showed ants in super-colonies were aggressive toward ants with outside genetics.

Additionally, polydomous colonies, which are ant colonies that are spatially separate but socially connected, were only present in urban habitats, Vargo said. This suggests house ants only create super-colonies in developed areas. Ants from different urban areas shared some genetic similarities, suggesting they are adapting to features that are common in the urban environment.

As a next step, researchers plan to compare stable isotopes in the ants to look at dietary changes and how they might relate to natural vs. urban environments and possible contributing factors like temperature and the urban heat island effect.

Vargo said the researchers have hypotheses but no data yet linking how and why changes occurred.

The research was initiated by Blumenfeld, who was a doctoral student in Vargo’s lab and is now a post-doctorate researcher at Yale University. He said he is interested in answering questions related to adaptive evolution in animals regardless of classification or species, and whether they are invasive or adapting to human-caused disturbances, including cities.

“The study highlights urbanization’s influence on the evolutionary course for species,” he said. “It’s important for us to answer questions related to adaptive evolution, whether it is an invasive species or a forest species adapting to city environments.” (PCT Online, October 18, 2023) <https://www.pctonline.com/news/ants-behavioral-physiological-development-urban-sprawl/>

## **INFECTIOUS DISEASE EXPERTS CONCERNED ABOUT POTENTIAL YELLOW FEVER RETURN**

Mosquito-transmitted virus infections are on the rise and their spread is accelerating in Texas, Florida and elsewhere in the American South. With the rise of mosquito-borne illnesses, infectious disease experts at Baylor College of Medicine and Stanford School of Medicine are warning of the possible re-emergence of yellow fever in the southern portion of the U.S. Their perspective piece on the virus' potential return was [published in the New England Journal of Medicine](#). It calls for yellow fever to be prioritized in national pandemic preparedness planning.

Yellow fever is a mosquito-borne viral illness that decimated southern U.S. cities in regular epidemics in New Orleans, Galveston, Memphis and Charleston from 1820 to 1905, according to Dr. Peter Hotez, professor and dean of the National School of Tropical Medicine at Baylor and co-director of the Texas Children's Hospital Center for Vaccine Development and co-author of the paper. The virus is a flavivirus and arbovirus infection like dengue or Zika virus, but with much higher mortality. Yellow fever is transmitted by Aedes mosquitoes, which are common in the Caribbean and Latin America, as well as southern urban areas like those in Texas and Florida.

"We've seen a rise in mosquito-transmitted illnesses in Texas and Florida, including malaria, dengue, chikungunya and Zika virus, but now we're also worried about yellow fever since it seems to be accelerating in tropical regions of Latin America such as Brazil and Venezuela," Hotez said. "The consequences of a high mortality infection like yellow fever re-emerging in the southern U.S. would be profoundly destabilizing."

Experts propose expanding surveillance activities by enhancing local health departments to combat mosquitoes and mosquito-borne illnesses as well as developing antiviral drugs, vaccines and new gene drive technology (permanently altering insect genes through genetic engineering) for mosquito control efforts.

"The mosquitoes that spread yellow fever are here in the U.S. and conditions are increasingly favorable for them as our world warms," said Dr. Desiree LaBeaud, professor of pediatrics-infectious disease at Stanford Medicine and co-author of the publication. "We need a comprehensive plan to better protect at-risk communities in the southern U.S. from mosquito-borne diseases."

"One of the reasons we established National School of Tropical Medicine at Baylor was in recognition that tropical infections have become a new normal due to a confluence of climate change, urbanization and poverty on the U.S. Gulf Coast and Texas," Hotez said. (PCT, October 21, 2023)

<https://www.pctonline.com/news/infectious-disease-experts-concerned-yellow-fever/>

## **NOT ALL CHEMICALS STORE THE SAME OVER WINTER**

For many reasons, some farmers buy bulk inventory of herbicides, pesticides or adjuvants during the fall and winter.

Whether they are worried about lingering supply chain issues or because it makes economic sense for them, some make these purchases well before the growing season begins.

If you are one of those producers, start talking to your dealer now. The intent is not to stockpile products but to have a modest supply for use during the next growing season. Keep in mind that many herbicides, especially liquid products, don't have a long shelf life. Make sure to keep your inventory fresh, and don't purchase more than what you can use within two to three years.

In general, dry products tend to last longer if properly stored, but their effectiveness still degrades over time. Also, when placing herbicides on storage shelves, make sure to put the dry products on the upper shelves in case the liquid products leak, so they can't contaminate your dry materials.

## Watch temperatures

Aside from having a secure and dry storage facility, one of the biggest concerns when storing herbicides over the winter is low temperatures in the storage room. In general, freezing temperatures can change and negatively affect the chemistry of some pesticides inside the container and can also damage the container itself.

Premixed liquid products that contain multiple active ingredients seem to be affected more by low temperatures than products with a single active ingredient. Some premixes tend to separate in the container and can be difficult to get back into a homogeneous liquid before use in spring.

Pesticides are best stored between 40 and 90 degrees F. However, it seems many herbicides, especially the newer formulations, are not affected as much by low storage temperatures.

Many labels — for example, atrazine, 2,4-D, LV4, Acuron, Anthem Maxx, Corvus, metribuzin, Gramoxone 3.0, Sharpen, Enlist One, Valor, Osprey, Quelex, most dry herbicides and many others — have no minimal temperature limit. They simply state that the product should be stored in its original container and in a dry, secure location.

Some labels stipulate that the product should not be in direct extreme heat or sunlight. Other products — such as Liberty, Prowl H2O/EC, Halex GT, Pursuit, Reflex, Crossbow and others — have specific minimum temperature limits that range between 40 and minus-10 degrees, depending on the product.

A few products such as Prowl H2O, Engenia, Weedar 64 (2,4-D amine) and others can freeze and be used once thawed. But make sure to slowly warm the product for several days and shake periodically. If the contents do not redissolve into a consistent mixture, it probably should not be used. During this process, check the container for cracks by slowly inverting or rolling it on the ground.

To be sure, it is best to read the “storage and disposal” section of the product label. And keep in mind that all these considerations are useful for adjuvant products as well.

Farm chemicals are expensive. It’s a good idea not to crow about your full storehouse. Otherwise, you may find it not so full one morning.

For more details and other useful links, refer to the National Pesticide Information Center’s website at [npic.orst.edu](http://npic.orst.edu).

(FarmProgress September 5,2023)  
<https://www.farmprogress.com/crop-protection/research-shows-see-spray-effective-at-targeting-weeds->

## 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: November 2, 2023

Title: Target Oklahoma Fall Workshop 2023

Location: Reed Center Midwest City OK

Contact Jennifer Gonzalez (800) 352-3870

<https://www.target-specialty.com/news-and-events/event-registration>

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

### Date: November 3, 2023

Title: Helena Cotton 2023- Dryland Future Plot

Location: Helena Agri-Enterprises - Altus and Reed

Locations contact for exact locaion

Contact David Dugan (580) 318-3575

CEU's:	Category(s):
2	1A
2	Private

### Date: November 6-8, 2023

Title: 2023 Oklahoma Ag Expo

Location: Embassy Suites Norman OK

Contact Tammy Ford-Miller (580) 233-9516

<https://www.oklahomaag.com/oklahoma-ag-expo.html>

CEU's:	Category(s):
1	A
6	1A
1	3A
1	4
1	5
1	6
3	7C
9	10
7	Private

### Date: November 8, 2023

Title: Ensystem 2023 CEU Workshop

Location: Hampton Inn 3418 S 79th East Ave. Tulsa

Contact: DON STETLER (281) 217-2965

<https://ceuworkshop.com/>

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

### Date: November 16, 2023

Title: Heritage PPG Large Virtual Academy

Location: Virtual

Contact Rachel Mohorn (828) 638-5798

<https://web.cvent.com/event/d2a754c5-5dd1-491e-8f5f-c76315f78fe9/summary>

CEU's:	Category(s):
1	3A
3	7A
1	7B
2	8
3	1

### Date: November 16, 2023

Title: BWI Fall Pest Workshop

Location: Oklahoma City contact for location

Contact Tim Ruminer (405) 227-2985

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

## 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)

