

PESTICIDE REPORTS

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



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DRIFT PREVENTION GUIDELINES

It is a good time to revisit drift prevention guidelines with all the applications being done at this time of the year. It is very useful for farmers and commercial applicators to follow and implement these guidelines with any application. It has become even more important when using the new dicamba crop resistance technology that has been causing some problems in other states. It is very important to follow all drift prevention instructions on those labels when using that technology. With any herbicides or any other pesticide application drift prevention steps should be followed to prevent off target movement.

1) Select a nozzle that produces coarser (larger) droplets

Use nozzles that provide as coarse (large) droplet as practical to provide necessary coverage. Some labels may require specific droplet size for their use. Nozzle selection guides should give you a listing of droplet size provided by each nozzle. New air induction nozzles help produce larger droplets.

2) Use lower pressure on the sprayer and larger nozzles when possible

Higher pressures generate many more small droplets (less than 100 microns). Under most conditions, do not exceed 40 to 45 psi.

Use larger nozzles to increase flow rate instead of higher pressure. Larger nozzles allow more volume (GPA) at lower pressures.

3) Lower boom height

Wind speed increases with height. If boom height is a few inches lower, off-target drift is reduced. Keep boom as close as possible to the crop being sprayed.

4) Spray when wind speeds are low to avoid off target movement.

More spray will move off-target as wind increases. Some labels may specify specific wind speeds to make an application. Check wind speed with a hand held anemometer or the mesonet system before spraying.

5) Spray when wind is moving away from sensitive crops

Leave a buffer zone 50 to 100 feet in width (or larger if needed) if sensitive plants are downwind. Spray the buffer zone when the wind changes direction away from the sensitive crop.

6) Do not spray when the air is very calm

Calm air, or an inversion, reduces air mixing, which means spray can move slowly downwind. Inversions generally occur in early morning or near bodies of water.

7) Avoid high volatile formulations

Avoid ester formulations of certain types of herbicides which can easily volatilize in warm temperatures (above 80 F). Amine formulations are very unlikely to volatilize but can still cause particle drift.

8) Check ODAFF's pesticide sensitive viewer for pesticide sensitive crops

<http://maps.oda.state.ok.us/pslvags/>

9) Follow label recommendations to avoid drift with pesticides.

Labels may have specific requirements or directions for use to avoid drift of those products. Labels may require certain nozzles, droplet size, or wind speed requirements be met to avoid drift.

10) Select the time when drift is less likely to occur.

Certain time periods may be best for applications. On many occasions applications may have to be delayed days or weeks for favorable conditions.(PSEP, July 2017)

TEST GUIDELINE METHODS FOR BED BUG PESTICIDE PRODUCTS NOW AVAILABLE

EPA's final test guidelines, 810.3900 - Laboratory Product Performance Testing Methods for Bed Bug Pesticide Products, provides recommendations for the design and execution of laboratory studies to evaluate the performance of pesticide products intended to be effective against bed bugs. The guidance also includes directions for data reporting.

This guidance applies to products to be applied for a pesticidal purpose such as to attract, repel, or kill bed bugs. It does not apply to repellent products applied to human skin, and does not apply to products exempt from Federal Insecticide, Fungicide, and Rodenticide Act registration under 40 CFR 152.25.

EPA's test guidelines are intended for use in the testing of pesticides and toxic substances and development of data for submission to the EPA. The test guidelines are organized by series number Final Test Guidelines for Pesticides and Toxic Substances.

Under FIFRA, all companies wishing to register a pesticide product for use against public health pests, such as bed bugs, must submit pesticide product performance data that demonstrate that the pesticide product works against the pests for which the product is intended. The data generated to support pesticide product label claims against public health pests are required to be submitted when applying for registration to help inform the Agency's regulatory decisions during the registration process.

Go to www.regulations.gov, docket #EPA-HQ-OPPT-2009-0150 to view the series 810.3900 test guidelines.

Go to www.regulations.gov, docket #EPA-HQ-OPP-2011-1017, to view the Federal Register Notice for this action. (EPA, June 15, 2017) <https://www.epa.gov/pesticides/test-guideline-methods-bed-bug-pesticide-products-now-available>

ARKANSAS PLANT BOARD VOTES TO BAN DICAMBA — NOW WHAT?

The Arkansas State Plant Board has voted to pass a proposed emergency rule to ban the use of in-crop dicamba, with an exemption for pastureland, and to expedite the rule increasing civil penalties for dicamba misuse.

The proposed rule is the first step in the process of establishing an emergency rule. The next step includes a review of the proposed rule by the governor before being submitted to the Executive Subcommittee of the Arkansas Legislative Council for approval.

“Governor (Asa) Hutchinson has followed this issue closely and previously tasked Secretary (Wes) Ward and ASPB Director (Terry) Walker with visiting

farmers in areas with heavy dicamba damage. Governor Hutchinson will be conducting a thorough review of the proposed rule as soon as possible,” says Adriane Barnes, spokesperson for the Arkansas Agriculture Department.

As of the morning of Friday, June 23, the board had received 242 complaints about dicamba drift across 19 counties in the state — and the number continues to grow by the day. The complaints are what triggered the vote. Earlier in the week, the board passed further restrictions that would require hooded sprayers and a one-mile buffer in order to apply the in-crop use of dicamba.

“When you see those numbers of complaints, something is not working. It just gives me a lot of pause. I’m really anxious about it,” Andrew Thostenson, Pesticide Program Specialist with the North Dakota State University Extension Service, says. He adds: “I feel really bad for those people who had their crops damaged. This is not a deal where we’re talking \$10 or \$15 dollar soybeans — the margins are not where they’ve been in previous years. If you have a short crop because of a drift situation, it’s much more devastating at these lower prices.”

“I think we made a monumental effort to try to teach everyone, but I still think there was a lack of understanding by a lot of guys just how important it was to follow all of the regulations.” —Bob Scott; credit: University of Arkansas Division of Agriculture Research & Extension

Bob Scott, Professor and Weed Scientist at the University of Arkansas Cooperative Extension Service, spent about two weeks on the road when the complaints started coming in to take a look at the damaged fields and offer growers help. He tells CropLife that a majority of the drift damage reported up until about 10 days ago was on soybeans that were in the vegetative stage, when the

crop is still able to recover somewhat if irrigated and sprayed properly thereafter. When injury occurs in this stage, “it does not usually result in big yield loss, according to our limited data. There is really nothing you can do except give them time to recover,” he says.

He is more concerned about complaints that have popped up in the last week, because despite the tropical depression that had moved through and delayed plantings, more plants would have still moved into the reproductive stage, where impact on seed production, plant development, and yield loss is much more severe.

Scott blames the drift problems in Arkansas primarily on wind movement and possibly inversions, as opposed to volatility, which BASF’s Engenia formulation (as well as Monsanto’s XtendiMax, although it is not labeled for use in Arkansas) addresses.

Impact of a Ban

In a state where about 35% to 40% of soybeans are Roundup Ready 2 Xtend, there were about a half-million acres of dicamba-tolerant soybean crops as of last week that either hadn’t been sprayed or could possibly need a second application of dicamba, according to an unscientific study Scott’s extension service team conducted. But that figure will decline each day as growers continue to spray until the governor reviews the rule. This number includes acres where Flexstar might still work and PPO resistance to pigweed has yet to develop.

“The bottom line is, if a farmer planted Xtend soybeans because he has PPO-resistant pigweed, he would be left without an option to control pigweed, so (a ban) would be a bad deal for those guys,” he says.

In some cases, Scott got calls to visit farms that had been accused of drifting to their neighbor’s fields, but there was no clear indication the growers had done anything out of line with the label requirements. “Those are the ones where you leave scratching your head. They are good applicators, have good records, and seemed to follow the guidelines well, and yet they still have unacceptable movement,” Scott says.

“Going into the fall, we’re really going to have to look at drift complaints, categorize and narrow them down, and try to figure out what’s going on here to determine whether we can use this technology or not ... I think we made a monumental effort to try to teach everyone, but I still think there was a lack of understanding by a lot of guys just how important it was to follow all of the regulations. Also, unless you see it for yourself, it’s hard to believe how sensitive the soybean is to even the smallest amounts of dicamba. I just think a lot of guys didn’t really comprehend how bad it could be,” he says.

Scott says that in his experience, “most of the guys who got drift aren’t walking around mad. They just want the problem solved, and if the only way to solve it is a ban, then that’s fine with them. I don’t think they necessarily want that, but they just want to farm their crops and not be drifted on.”

He says, “We’re a pretty diverse state. We’ve got conventional soybean growers; we’ve got guys that like LibertyLink; and we’ve got guys that made the switch from Roundup to Xtend or Liberty to Xtend, and we’ve got vegetable growers. I’m a big believer that a guy should be able to grow whatever he wants on his land, and shouldn’t have to plant any one company’s type of bean just in self-defense, to prevent injury.”

Thostenson adds: “My heart goes out to those inspectors and people down there trying to figure out what’s going on. This is going to be very tough; the scale of problems is very big. Up here in North Dakota, if we have more than 50 or 60 complaints in a growing season you’ve got a major problem. You’re talking hundreds down there — that boggles the mind.” (CropLife, June 23, 2017)

<http://www.croplife.com/crop-inputs/arkansas-plant-board-votes-to-ban-dicamba-now-what/>

KANSAS GROWERS AWARDED \$217.7M IN SYNGENTA CORN LAWSUIT

WASHINGTON, June 23, 2017 - A Kansas jury has awarded \$217.7 million in damages to more than 7,000 corn growers in the state after finding that Syngenta was negligent in marketing corn to U.S. farmers that was rejected by China in 2013.

“We’re very pleased,” plaintiffs’ attorney Patrick Stueve told Agri-Pulse today shortly after the verdict was announced. “The jury awarded full compensatory damages” – the amount sought by plaintiffs.

Syngenta maintained the claims are without merit and vowed to appeal.

But Stueve said the jury, which heard the case in federal court in Kansas City, Kan., “was sending a very strong message that they don’t want a repeat of this pattern of conduct in the future.”

The class of plaintiffs, represented by four Kansas growers, alleged they suffered economic loss from lower corn prices and lost sales when Syngenta sold two genetically modified strains of its corn seed – Agrisure Viptera and Agrisure Duracade – to the

U.S. market before China had approved the traits for import.

Syngenta had argued that corn prices were already falling when China began rejecting the corn shipments, and that the country’s refusal to accept U.S. corn was unrelated to the discovery of traces of the MIR162 trait. But the jury rejected those arguments. China eventually approved the trait for import in December 2014, 13 months after it had stopped accepting U.S. corn.

“The verdict is great news for corn farmers in Kansas and corn growers throughout the country who were seriously hurt by Syngenta’s actions,” the four co-lead counsel said in a statement issued shortly after the verdict was announced. “This is only the beginning. We look forward to pursuing justice for thousands more corn farmers in the months ahead.” In the statement, they said that nationwide losses to U.S. corn growers “due to the loss of the Chinese market are estimated to exceed \$5 billion.”

The Kansas trial was the first of eight federally certified state class-action lawsuits in a series of so-called “bellwether” cases to go to a jury. The other certified state class action lawsuits involve Arkansas, Missouri, Illinois, Iowa, Nebraska, Ohio, and South Dakota corn producers. Bellwether cases are designed to help parties gauge the relative strength or weakness of their claims and determine whether they should settle.

Syngenta issued a statement saying it was “disappointed with today’s verdict because it will only serve to deny American farmers access to future technologies even when they are fully approved in the U.S.”

The case “is without merit,” the company said, vowing to appeal “and continue to defend the rights of American farmers to access safe and effective U.S.-approved technologies.”

“Syngenta commercialized Agrisure Viptera in full compliance with U.S. regulatory and legal requirements, including USDA, EPA, and FDA regulations. Viptera had also received approval in the key import markets recommended at the time by the National Corn Growers Association and other industry associations.”

The company, which has received shareholder approval to be acquired by China National Chemical Corp., or ChemChina, said it “believes that American farmers should have access to the latest U.S.-approved technology to help them increase their productivity and yield. American farmers shouldn’t have to rely on a foreign government to decide what products they can use on their farms.”

The plaintiffs were represented by Don Downing of Gray, Ritter & Graham, P.C., Scott Powell of Hare, Wynn, Newell & Newton, Patrick Stueve of Stueve Siegel Hanson LLP and William Chaney of Gray Reed & McGraw LLP. (Agri Pulse, June 23, 2017) <https://www.agri-pulse.com/articles/9436-kansas-growers-awarded-2177m-in-syngenta-corn-lawsuit>

BED BUG AWARENESS POOR AMONG U.S. TRAVELERS, BUT REACTIONS ARE STRONG

Most business and leisure travelers in the United States can’t identify a bed bug, and yet the pest evokes a stronger response in hotel guests than any other potential room deficiency.

In a survey of U.S. travelers conducted by researchers at the University of Kentucky, 60 percent said they would switch hotels if they found evidence of bed bugs in a guest room. In the same survey, however, just 35 percent of business travelers and 28 percent of leisure travelers correctly identified a bed bug in a lineup of common insects. The survey report is soon to be published in *American Entomologist*, the quarterly magazine of the Entomological Society of America.

“Considering all the media attention paid to bed bugs in recent years, the fact that most travelers still have a poor understanding of them is troubling,” says Michael Potter, Ph.D., extension professor in UK’s Department of Entomology and co-author of the study.

It is particularly problematic given the central role that online reviews play in travelers’ selection of where to stay. Even just one erroneous review could unduly harm a hotel’s reputation, as more than half of survey respondents said they would be very unlikely to choose a hotel with a single online report of bed bugs.

Other findings include:

- More than half (56 percent) of respondents said they either never considered the threat of bed bugs while traveling or considered it but were not worried.
- If a hotel provided information on steps it takes to prevent bed bug infestations, 46 percent of respondents said they would stay at the hotel and would appreciate knowing about those measures. The second most common response, however, was “do it, but don’t tell me” (24 percent).
- An overwhelming majority (80 percent) of respondents said hotels should be required to tell guests if their room has had a prior problem with

bed bugs.(PCT Online, June 13, 2017)
<http://www.pctonline.com/article/bed-bug-awareness-poor-among-us-travelers/>

US EPA CHIEF DEFENDS CHLORPYRIFOS U-TURN

US EPA Administrator Scott Pruitt last week defended his controversial decision to abandon a plan to revoke food tolerances for the organophosphate insecticide, chlorpyrifos, telling lawmakers that criticism from the USDA about the proposal helped convince the Trump administration to change course.

Mr Pruitt issued the decision in March to reverse the proposed tolerance revocation not long after his confirmation as EPA Administrator. The order denied a petition brought by environmentalists keen to see a ban imposed on chlorpyrifos $\frac{3}{4}$ a move the EPA appeared ready to make.

After more than eight years of legal wrangling, the Agency in November 2016 said that scientific evidence supported revoking food tolerances for the insecticide. The EPA had concluded that aggregate exposures from food and drinking water could not meet the required safety standard under federal law.

But the Agency faced strong pressure from grower groups and other stakeholders to reverse course on the tolerance revocation plan, which would effectively ban agricultural uses of chlorpyrifos. US farmers annually use an estimated 5-6 million lbs of the insecticide on some 50 crops, including almonds, apples, citrus fruit, maize and strawberries.

Mr Pruitt appeared to heed their concerns in his March order formally denying the petition and touting a return to "sound science."

But the move has done little to quell controversy surrounding the EPA's review of chlorpyrifos. Seven states have filed an administrative appeal of

the decision with the EPA. Environmentalists have also filed complaints with the US Court of Appeals for the Ninth Circuit seeking to get the tolerance revocation plan finalized.

Representative Betty McCollum pressed Mr Pruitt on the decision during a June 15th budget hearing before the House Appropriations sub-committee on interior, environment and related agencies. "This pesticide damages children's brains yet the evidence was disregarded, evidence from doctors and scientists," said Ms McCollum, a Minnesota Democrat. "I'm curious to know ... you were there a month and then this was reviewed. How did you come to find yourself disavowing, going backwards?"

Mr Pruitt responded that comments by the USDA stood in contrast to the EPA's assessment. The USDA outlined its concerns to the EPA in February, echoing industry worry that the Agency's scientific review was suspect and overestimated both exposures and risks from chlorpyrifos. "On chlorpyrifos, the USDA had a completely different perspective and had in fact made EPA aware of that as the process was ongoing," Mr Pruitt told Ms McCollum. "We based that decision like we base every decision ... on meaningful data, meaningful science."

(Pesticide & Chemical Policy/AGROW, June 20, 2017)

IARC TAKING HEAT FROM UNLIKELY SOURCES OVER GLYPHOSATE CLAIMS

A little more than a year ago, Crop Protection News reported that the U.S. Environmental Protection Agency (EPA) contradicted claims by the International Agency for Research of Cancer (IARC) on whether or not the herbicide glyphosate is a carcinogen.

Now, IARC is being called on the carpet by an unusual source: Mother Jones magazine.

Glyphosate is a widely used herbicide manufactured by Monsanto — and commonly sold under the brand, “RoundUp.”

As Crop Protection News reported last May, the EPA's Cancer Assessment Review Committee (CARC) came to the conclusion following an in-depth analysis of several dozen published and unpublished scientific studies of the weed killer. The report completed in October 2015 was inadvertently released to the public in April 2016.

According to the report, “the epidemiological studies in humans showed no association between glyphosate exposure and cancer of the following: oral cavity, esophagus, stomach, colon, rectum, colorectum, lung, pancreas, kidney, bladder, prostate, brain (gliomas), soft-tissue sarcoma, leukemia, or multiple myelomas.”

Last week, Mother Jones published a scathing article claiming IARC didn't “have all the facts” before it published its report naming glyphosate a “probably carcinogen.”

“According to a new Reuters investigation, Aaron Blair, the scientist who led the IARC's review panel on glyphosate, had access to data from a large study that strongly suggested that Roundup did not cause cancer after all—but he withheld that data from the RoundUp review panel,” writes Mother Jones' Kiera Butler. “Weirder still: Blair himself was a senior researcher on that study.”

The Reuters investigation mentioned by Butler found that “Blair knew the unpublished research found no evidence of a link between glyphosate and cancer” and Blair “also said the data would have altered IARC's analysis.

“He said it would have made it less likely that glyphosate would meet the agency's criteria for being classed as ‘probably carcinogenic,’” writes Reuters' Kate Kelland. “But IARC, a semi-autonomous part of the World Health Organization, never got to consider the data.”

“The agency's rules on assessing substances for carcinogenicity say it can consider only published research – and this new data, which came from a large American study on which Blair was a senior researcher, had not been published,” continued Kelland.

Reuters' investigation centered on documents from a pending court case in which 184 California plaintiffs filed suit against Monsanto over the company's alleged failure to warn them about the carcinogenic risks of glyphosate.

That lawsuit, as well as a host of other similar suits, hinged on the IARC claims that glyphosate caused cancer.

Mother Jones reports that “there are no signs of IARC backing off its conclusion that RoundUp causes cancer,” but it wouldn't be the first time that the agency has had to reverse course.

In 2016, IARC reversed its 1991 claim that classified coffee as a carcinogen. As is the case with glyphosate, IARC's coffee claims have contributed to litigation against Starbucks and other companies.

As far as the long-term implications of IARC's reversals, Hank Campbell writes for the American Council on Science and Health that it's “bad for people who want to trust IARC's recommendations.”

“Its reasons to reverse course on coffee are no more valid than its reason to have declared it possibly carcinogenic to humans in the first place,” continues Campbell. “And the coffee claims are no more valid than any other claims the agency has made about the hazards of common things.”

Among those “other claims” include glyphosate.

Even though IARC tells Reuters that it has no plans to reverse its carcinogenic claims on glyphosate, the findings in Reuters investigation could have the same impact as the coffee reversal — calling into question the validity of any one of IARC's claims.

(Crop Protection News, June 17, 2017)
<http://cropprotectionnews.com/stories/511129168-iarc-taking-heat-from-unlikely-sources-over-glyphosate-claims>

CALIFORNIA READY TO ADD GLYPHOSATE TO PROP 65 LIST

The US state of California is poised to formally add the herbicide, glyphosate, to its list of chemicals known to cause cancer, according to the state's Office of Environmental Health Hazard Assessment (OEHHA). The listing, which could require warning labels on some glyphosate products, will become effective on July 7th. The OEHHA's June 26th statement came after the California Supreme Court rejected Monsanto's request to stay the glyphosate listing. Monsanto says that it will continue to fight the state's decision.

The OEHHA decided to place the herbicide on California's Proposition 65 list of cancer-causing chemicals in 2015 after the WHO's International Agency for Research on Cancer (IARC) declared the herbicide a probable human carcinogen. The IARC is one of the "authoritative bodies" that can be relied upon for listing a chemical under Prop. 65's Labor Code listing mechanism.

Approved by California voters in 1986, the Prop. 65 statute requires the state to inform consumers about products that contain chemicals known to cause cancer or reproductive harm. More than 800 substances are listed under the law, including an array of chemicals commonly found in foods and drinks. Businesses in California cannot knowingly expose individuals to significant amounts of those chemicals without first giving them clear and reasonable warning.

The OEHHA says that the underlying law effectively requires them to add glyphosate to the list because of the IARC declaration.

Monsanto disagrees and notes that regulators all across the world, including the US EPA, the European Chemicals Agency and the OEHHA, have concluded that glyphosate does not cause cancer. The company filed suit in January 2016 to prevent the listing, arguing that relying solely on the IARC declaration was unreasonable and unlawful.

But Fresno Superior Court Judge Kristi Kapetan dismissed Monsanto's lawsuit in March, ruling that the OEHHA's proposal to list the herbicide was justified and supported by state law.

The OEHHA is still considering where to set the "no significant risk level" for glyphosate. Exposures below that level would not require a warning label. (Pesticide & Chemical Policy/AGROW, June 27, 2017)

NEW TEST LETS UF SCIENTISTS FIND ZIKA FASTER

A University of Florida entomologist is working with other scientists to detect the Zika virus in minutes, rather than days or weeks, allowing for faster and more targeted mosquito control practices and detection in patient samples.

Zika can lead to multiple symptoms in adults, including fever, rash, headache and joint pain. It also can cause microcephaly, a condition that causes infants to be born with a head that's much smaller than that of a normal baby.

The U.S. Centers for Disease Control and Prevention reported 5,102 symptomatic Zika cases in the U.S. in 2016. Of those, 224 people got the virus by a mosquito in their area, rather than from a mosquito overseas. There have been 123 Zika cases in the U.S. from Jan. 1 through May 31, 2017. Florida has reported 46 cases so far in 2017 due to international travel. The numbers may get higher as we start the rainy season, when mosquitoes are more likely to bite and thus, spread viruses like Zika.

In a new study, scientists - including Barry Alto from the UF Institute of Food and Agricultural Sciences - show how they use tools to find Zika RNA in mosquitoes tested at a UF/IFAS lab. Alto helped prepare virus-infected samples used by Ozlem Yaren, the first author on the paper that describes this study.

“These technological advances dramatically advance the goal of having a user-friendly RNA-based virus detection system,” said Alto, a faculty member at the UF/IFAS Florida Medical Entomology Laboratory in Vero Beach, Florida. “These studies also demonstrate that the detection system is as sensitive as the current testing and can detect the amount of virus that would be present in mosquito saliva, which is an indicator of transmission potential.”

Like all living organisms, the Zika virus has a genome, but it differs from humans in that it has RNA, while humans have DNA and RNA. With the new tools, Alto and the rest of the team take a sample, such as a crushed mosquito that might carry the virus, and look for the Zika RNA in that sample.

To find Zika now, researchers use a test called a Reverse Transcription Polymerase Chain Reaction, which essentially amplifies RNA in mosquitoes. To get those tests, dead mosquitoes are sent to a lab, which is time-consuming and costly.

The new tools eventually will allow the team to test for Zika RNA in the field in about 30 minutes for a few dollars, said Steven Benner, the lead author of the new study and an Alachua-based scientist at the nonprofit research organization called Foundation for Applied Molecular Evolution. The research team will study the accuracy of their testing system in field conditions this summer, Benner said.

The new study is published in the journal BMC Infectious Diseases. (PCT Online, June 9, 2017) <http://www.pctonline.com/article/new-zika-rna-test-2017/>

BED BUGS: PROACTIVE IPM STRATEGIES CRITICAL IN MULTI-UNIT HOUSING

Amid the persistent threat of bed bug infestations in multi-unit housing, the best advice for property owners, managers, and tenants looking to avoid the pests is the same advice that applies to many other afflictions: an ounce of prevention is worth a pound of cure.

So says an extensive review of existing research into management strategies for bed bugs, published today in the Journal of Integrated Pest Management (JIPM). The free, open-access report examines dozens of field studies on bed bug management and concludes that “programs that consider the residents, housing managers, and staff and attempt to detect infestations before they are reported and before populations spread to multiple units stand the best chance at succeeding.”

Multi-unit housing such as assisted living facilities and affordable housing communities are particularly vulnerable to bed bug (*Cimex lectularius*) infestations, and research shows that the most common management strategies in these settings rely mostly on application of insecticides. These reactive methods are often costly and are not always successful, says Alvaro Romero, Ph.D., assistant professor of urban entomology at New Mexico State University and lead author of the JIPM report.

“We consider early detection and regular monitoring to be the most important components of successful integrated pest management (IPM) programs for bed bugs in multi-unit housing,” Romero says.

A multi-pronged IPM approach to bed bug management includes a variety of nonchemical methods—such as clutter reduction, mattress and box spring encasements, steam treatment, heat treatment, vacuuming, laundering, and placement of bed bug traps and monitors—all of which “help to reduce risks associated with chemical methods, such as pesticide exposure events and insecticide resistance development,” says Romero, who wrote

the JIPM report with a team of researchers from University of California Cooperative Extension; UC Riverside; UC Berkeley; University of Arizona; University of Hawaii at Manoa; and Colorado State University.

Part of the challenge faced in managing bed bugs in multi-unit housing is the need to continually educate tenants on bed bug prevention and identification. Past studies that Romero and colleagues reviewed on the public's ability to identify a bed bug correctly consistently showed low percentages of people able to do so.

Meanwhile, property owners and managers are advised to weigh the investment in ongoing, preventative management methods against the risk of costly control efforts necessary once an infestation has occurred.

“Although proactive IPM approaches for bed bugs may initially generate substantial additional costs, these long-term programs may eventually make economic sense as the best ways to effectively manage bed bugs in these challenging environments,” says Romero.(Entomology Today, May 31, 2017)

<https://entomologytoday.org/2017/05/31/bed-bugs-proactive-ipm-strategies-critical-in-multi-unit-housing/>

CEU Meetings

Date: July 26, 2017

Title: Bionutritional Summit

Location: Ewing Irrigation and Landscape Supply
Tulsa OK

Contact: Kristina Ersek (866) 563-2784

Course #: OK-17

CEU's: Category(s):

1 3a

Date: July 27, 2017

Title: BWI Tulsa Summer Seminar

Location: Bass Pro Shoppes Broken Arrow OK

Contact: Kelly Keech (918) 693-6461

Course #: OK-17

CEU's: Category(s):

2 3C

2 10

ODAFF Approved Online CEU Course Links

PestED.com

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

CEU School

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

Technical Learning College

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

Green Applicator Training

<http://www.greenapplicator.com/training.asp>

All Star Pro Training

www.allstarce.com

Wood Destroying Organism Inspection Course

www.nachi.org/wdocourse.htm

CTN Educational Services Inc

http://ctnedu.com/oklahoma_applicator_enroll.html

Pest Network

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

Univar USA

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

Southwest Farm Press Spray Drift Mgmt

<http://www.pentonag.com/nationalsdm>

SW Farm Press Weed Resistance Mgmt in Cotton

<http://www.pentonag.com/CottonWRM>

Western Farm Press ABC's of MRLs

<http://www.pentonag.com/mrl>

Western Farm Press Biopesticides Effective Use in Pest Management Programs

<http://www.pentonag.com/biopesticides>

Western Farm Press Principles & Efficient Chemigation

<http://www.pentonag.com/Valmont>

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

link:<http://www.oda.state.ok.us/cps-ceuhome1.htm>

ODAFF Test Information

Pesticide applicator test sessions dates and locations for July/August are as follows:

July		August	
10	OKC	8	OKC
13	Tulsa	10	Tulsa
24	OKC	17	Enid
27	Tulsa	21	OKC
		24	Tulsa

Altus: SW Research & Extension Center
16721 US HWY 283

Atoka: KIAMICHI TECH CENTER 1301
W Liberty Rd, Seminar Center

Enid: Garfield County Extension Office,
316 E. Oxford.

Goodwell: Okla. Panhandle Research &
Extension Center, Rt. 1 Box 86M

Hobart: Kiowa County Extension Center
Courthouse Annex, 302 N. Lincoln

Lawton: Great Plains Coliseum,
920 S. Sheridan Road.

McAlester: Kiamichi Tech Center on
Highway 270 W of HWY 69

OKC: Arcadia Conservation Education
Building 7201 E 33rd St. Edmond
OK (New Location)

Tulsa: NE Campus of Tulsa Community
College, (Apache & Harvard)
Large Auditorium

**Pesticide Safety
Education Program**