

PESTICIDE REPORTS

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



March, 2013

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OSU PSEP TEST HELP SESSIONS

The OSU Pesticide Safety Education Program will conduct the next test help sessions for 2013 in April. The next test help will be at the Oklahoma County Extension Center on April 17th.

This testing session will focus on information covered in the core/service tech test. OSU PSEP will answer any questions over other category tests during this session.

Cost of registration is \$30 if received by April 10th. Registration will increase to \$50 after April 10th. **ODAFF Testing fees are not included in the registration fee and must be paid separately.**

Register online at the Pesticide Safety Education Program (PSEP) website at <http://pested.okstate.edu/practical.htm>. Registration forms can also be downloaded from the website.

Registration will start at 8:45 and the program will run from 9:00 am to 12:30 pm for both locations. Testing will begin at 1:30 pm for both locations.

The next test help sessions will be May 30 in Tulsa.

NO CEU's will be given for this program!

FUMIGATION PRACTICAL

The first Fumigation Practical for 2013 has been scheduled for April 2nd in Stillwater. Registration is now open for this practical. Please plan accordingly the next and last Fumigation Practical will be held September 24th. Registration is \$200 and registration information can be found at <http://pested.okstate.edu/practical.htm>. (PSEP)

APPLICATORS OVEREXPOSED TO PESTICIDES

(Pesticide & Chemical Policy February 22, 2013, Volume: 41 Issue: 09)

Safety training in handling pesticides is cited by Washington State officials as a contributing factor in a spike in Washington State workers who required interventions after being overexposed to pesticides on the job in 2012.

The numbers are relatively small -- 18 out of 216 handlers participating statewide in cholinesterase testing. But, that's still a little over 8% in a state that has had an overexposure rate of just over 3% the last two years. The extent of overexposure for five of the workers was enough for them to be temporarily barred from further work. The other 13 cases of overexposure resulted in intervention by state officials.

Cholinesterase activity greater than 20% triggered the 18 interventions. The six employers in the orchard region of eastern Washington were required to evaluate pesticide handling procedures as a result. Five of the cases were prohibited from handling organophosphate and n-methyl carbamate pesticides, according to the state's *Cholinesterase Monitoring of Pesticide Handlers in Agriculture: 2012 Report*, released Feb. 7.

The most affected workers were employed as mixer/loader/applicators.

“Violations that may have contributed to overexposure include, but [are] not limited to training, respiratory protection, and personal protective equipment requirements. Toxicity class I and II cholinesterase inhibiting pesticides handled within the 30 days prior to periodic testing included Lorsban 4E, Guthion, and Carzol SP (Sevin 4F, a Class III N-methyl-carbamate, was also handled).

Washington officials did not respond to requests for interviews. However, in the pesticide safety training industry, the state's program is considered robust. That said, it is still believed subject to a decline in safety training revenues and it is not clear what role that might have played in the spike of workers overexposed to pesticides.

RESEARCHERS EXAMINING BED BUG ACTIONS FOR NEW MANAGEMENT TACTICS

Learning more about the behavior of bed bugs is one approach being used by U.S. Department of Agriculture (USDA) scientists to identify compounds to help control these pests.

The resurgence of bed bugs over the last decade has caused problems in major U.S. cities where they infest homes, apartments, hotels, shelters and even places of work. The small, blood-feeding insects are not known to transmit diseases, but they can cause severe reactions in people who are allergic to them. Bed bugs usually go unnoticed until their numbers increase significantly, and getting rid of them can be costly.

Entomologist Mark Feldlaufer and chemist Kamlesh Chauhan at the Agricultural Research Service (ARS) Henry A. Wallace Beltsville Agricultural Research Center (BARC) in Beltsville, Md., have identified two new alarm pheromones—4-oxo-hexenal and 4-oxo-octenal—in immature bed bugs. The releasing of alarm pheromones, which are defensive compounds, causes aggregated bed bugs to scatter.

Scientists collected cast skins that retain chemicals from the bed bug's scent glands and then used gas chromatography and mass spectrometry technology to analyze and identify compounds. Swedish researchers subsequently identified the same compounds from a related species, the tropical bed bug, demonstrating that the compounds are biologically active.

This indicates that alarm pheromones may have implications in bed bug management, according to Feldlaufer, who works at BARC's Invasive Insect Biocontrol and Behavior Laboratory. By causing insects to disperse, the likelihood of bed bugs coming into contact with a control agent increases.

ARS and University of Nevada-Reno scientists also identified 17 compounds in the bed bug's outer protective layer of skin, a discovery they believe may play an important role in bed bug aggregation behavior.

(PCT Online, February 14, 2013)
<http://www.pctonline.com/bed-bug-actions-management-tactics.aspx>

HERBICIDE RESISTANT WEEDS DOUBLE US ACREAGE IN TWO YEARS

Weeds resistant to the most commonly used herbicide are marching across agricultural states, nearly doubling infiltrated acreage to more than 61 million in just two years, with little relief in the form of alternative treatments in sight, according to a survey of 3,000 farmers and interviews by *Pesticide & Chemical Policy*.

The resistant weed that's created the greatest concern is Palmer amaranth, also known as pigweed, say agronomists. It grows rapidly and drains water and nutrients from the soil. And, it has a well-deserved reputation for developing resistance to multiple chemistries. Compounding the problem is a shortage of alternative herbicidal treatments to the predominant Roundup glyphosate product.

As a result, producers of some crops, especially Roundup Ready cotton, have limited recourse when the glyphosate-resistant weed shows up in their fields, agronomists tell *P&CP*. Since glyphosate resistant pigweed was first identified in Georgia in 2005, 16 other states have reported finding a resistant phenotype. Liberty Link is growing in

popularity as an emerging alternative, field interviews show, but rollout of new products is not keeping up with spread of the weeds

South is the worst

A survey published Jan 25 by Stratus Ag Research of Guelph, Ontario (<http://bit.ly/VJ9X0k>) indicates glyphosate resistant weeds are spreading geographically in the U.S. and Canada. Based on the firm's poll of 3,000 farmers, the weeds are now found on 61.2 million acres of U.S. cropland, nearly double the acreage of the company's first survey in 2010. Nearly half (49%) of respondents say glyphosate resistant weeds were in their fields by 2012, in contrast to 34% in 2011. Although resistance is still worst in the South, from 2011 to 2012 the acres with resistance almost doubled in Nebraska, Iowa and Indiana. More than a quarter (27%) of farmers nationally said they had two or more resistant species on their farms, up from 12% in the 2010 survey. The most frequently identified resistant weed was marehail, followed by pigweed.

Until 2010, resistant weeds were a problem in the South. But in that year resistant pigweed officially infiltrated fields of number two corn and soybean in Illinois, a sign of things to come. Some say the resistant weed can be traced back even further. University of Illinois weed scientist Aaron Hager tells *Pesticide & Chemical Policy*, "Technically, it's been in Illinois for decades. You can look back in herbarian samples that were collected back in the '50s and '60s, and find records of it being here."

Hager says most of those samples were taken in the far southern part of the state, and crop scientists are worried that human and other traffic will transport pigweed seed further north into Illinois. He says based on research by a colleague who cultivated Palmer amaranth seed taken from the U.S. South, "It looks like they would more or less find a very nice home here in the state, even in northern areas of Illinois." He says farmers should watch for suspicious looking weeds. "If we don't pay attention to it, it could really be devastating once it does become established on more acres in the Midwest."

Another resistant weed species, waterhemp, is a bigger concern for Illinois farmers, because some of the weeds are also resistant to other chemistries. Hager says those populations will continue to increase and although glyphosate will still be a useful tool for the state's farmers, the number of acres on which the herbicide can be the only method of weed killing will continue to decline.

Farmers turning to Liberty Link

Some southern farmers are turning to Liberty Link, an alternative genetic trait offered by Bayer CropScience that allows soybeans, cotton and corn to be treated with another broad spectrum weed killer, Liberty (glufosinate). University of Arkansas Extension agronomist Jeremy Ross, whose state is the biggest soybean producer in the Mid-South, says 22% to 25% of last year's 3.2 million acres were planted with Liberty Link. "There's probably going to be a little more than that this year," Ross tells *P&CP*. "There's a lot of interest in Liberty Link, especially where we have really bad glyphosate-resistant pigweed problems." A University of Arkansas four-year study found Liberty Link soybeans yielded as well as their Roundup Ready competition, but Ross says there aren't many Liberty Link varieties with the disease resistance that's needed in the Mid-South. He expects more to come on the market in 2014, and seed company Dupont Pioneer said on Jan. 23 it will make five new Liberty Link varieties available to growers this year.

Arlene Cotie, field development manager for Bayer CropScience, says more than 17% of Mid-South soybeans last year were Liberty Link. She tells *P&CP*, "We have seen good adoption in the Midwest," although the increase was not as significant as it has been in the Mid-South. Liberty herbicide supplies were tight last year, and in 2013 Bayer is offering a rebate to growers who book both their seed and their herbicide in advance.

More than one chemical needed

Bayer, other companies, and university scientists are unanimous in recommending farmers treat their fields with a long-lasting residual herbicide before

planting, "so that we don't end up in the same situation as glyphosate," Cotie says. The only known case of weed resistance to glufosinate was detected in Malaysia a couple of years ago, she adds.

John Combest, media communications manager for Monsanto's Roundup Ready, says their market research finds 46% of U.S. soybean acres were treated with residual herbicides last year, up from 33% in 2010, and 80% of cotton received similar treatment, up from 43% the previous year. Combest tells *P&CP*, "We want to get that number as close to 100% as we can (but) realistically, that growth is impressive." He says it reflects the efforts of academics and other chemical companies that have partnered with Monsanto in a program through which farmers get financial incentives for using herbicides other than glyphosate on Roundup Ready crops. "One of the things that we're emphasizing to growers is there is no single, silver bullet solution to glyphosate resistance," he says.

Monsanto has been working with BASF Corp on producing crops that will be genetically altered to be tolerant of both glyphosate and dicamba. They've petitioned EPA to register a blend of the two herbicides and plan a number of test plots in 2013; Monsanto anticipates the dicamba tolerance trait will be available in soybeans in 2014, cotton in 2015, and corn "somewhere further down the line," says Combest, who adds the cotton will also carry the Liberty Link trait. Dow AgriSciences is developing crops tolerant of another herbicide, 2, 4-D, and expects what it calls "Dow Enlist" corn to be approved for sale to growers later this year in time for the 2014 season. And Bayer has in the works genetically-conferred tolerance of HPPD herbicides, which act by blocking an enzyme weeds need to protect their chlorophyll. Cotie says soybeans with the trait will be launched in the next year.

Despite the proliferation of glyphosate resistant weeds, Combest says Monsanto still believes with the use of residual herbicides and by following University recommendations, the Roundup Ready system is still viable. But he adds, "In areas where you face really serious weed resistance pressure we

always recommend multiple modes of action, and that include use of alternate platforms.”

(Pesticide & Chemical Policy, February 08, 2013
Volume: 41 Issue: 07)

RAT TALES ABOUND IN NYC AFTER SUPERSTORM SANDY

Four months after Superstorm Sandy and the debate continues about how much of an impact the storm has had on New York City’s rodent population, Yahoo News reports.

Experts aren't so sure about stories of hordes of displaced rodents fleeing the flood zone and taking up residence in buildings that were previously rat-free.

TV stations and newspapers have been rife with reports about rats infesting parked cars and fleeing the East River waterfront for the brownstones of Brooklyn Heights and exterminators enjoying a boom in business.

For some city officials, the last straw came a week ago when a rodent problem forced a two-day closure of Magnolia Bakery, a Manhattan landmark often credited with starting a national cupcake craze. Within days, a city councilwoman floated a proposal to create a \$500,000 emergency rat mitigation program for storm-impacted neighborhoods.

But the city's health department, which collects reams of data about the rat population and maps infestations looking for trends, said rodent complaints actually had declined since the late October storm, which was spawned when Hurricane Sandy merged with two other weather systems.

(PCT Online February 25, 2013)

<http://www.pctonline.com/nyc-rat-update-Sandy-update.aspx>

CSPI URGES EPA TO LIMIT HERBICIDE USE ON GENETICALLY ENGINEERED CROPS

Coinciding with the Weed Science Society’s annual meeting this week, in Baltimore, the Center for Science in the Public Interest (CSPI), on Monday, released a seven-page letter to EPA, urging the agency to limit the use of the weed-killer glyphosate and undertake other measures to slow the spread of resistant weeds.

Concern around how the current management of herbicide-tolerant crops is likely to lead to environmentally damaging practices, such as a greater use of more toxic pesticides and a return to tillage, took center stage in 2010 when the National Research Council issued its report “Impact of Genetically Engineered Crops on Farm Sustainability in the United States.” Based on its study, NRC suggested then that farmers often go back to old ways of doing things once they encounter weed resistance, increasing their use of glyphosate and adding other, more toxic herbicides. Tillage also tends to increase, damaging soil quality, the study found.

In a letter to EPA’s Office of Chemical Safety and Pollution Prevention (<http://bit.ly/VMmjGV>), Gregory Jaffe, CSPI biotechnology director, says that the agency should limit farmers’ use of glyphosate, marketed by Monsanto as Roundup, especially in geographic areas where resistant weeds are becoming a problem. Such a limit might forbid farmers from applying glyphosate in the same field two years in a row, he notes in a news release announcing the letter.

EPA also should encourage farmers to adopt resistant-weed management plans and reduce glyphosate use through integrated weed management, Jaffe suggests. Non-chemical weed management techniques, such as crop rotation and cover crops, will continue to be underutilized without EPA involvement, he says.

“It’s not in farmers’ or the biotechnology industry’s short-term financial interest to adopt these measures on their own, so the EPA should use its authority to protect glyphosate’s effectiveness,” Jaffe says in the news release. “Otherwise, the industry might squander this very valuable benefit of genetically engineered crops.”

Jaffe’s letter notes that EPA instituted similar requirements to protect the effectiveness of insect-resistant Bt crops. The letter also urges EPA to take steps to reduce the likelihood of weeds developing resistance to other major herbicides, such as 2,4-D and dicamba, because USDA will likely approve new biotech crops designed to tolerate these old pesticides, and farmers may begin planting them by next year.

Asked about the timing of his letter, Jaffe tells *Pesticide & Chemical Policy*, “The evidence [of a problem] is overwhelming, and EPA has done nothing. They needed a push to do something.”

Specific recommendations in the letter urge EPA to:

- Limit the use of glyphosate to prevent development and spread of herbicide resistant weeds. Some farmers will continue overusing glyphosate unless doing so is illegal;
- Require farmers to establish and implement resistant-weed management plans. Noting that the agency requests insect-resistant management through planting of refuges, CSPI says similar requirements are needed to manage weed resistance, either through individual farm plans or area-wide management plans;
- Require mandatory disclosure of each herbicide’s mode of action (MOA) on the label of herbicide products purchased by farmers. Currently, only some manufacturers voluntarily provide MOA labeling on their products;
- Provide incentives to encourage farmers to implement integrated weed management; and
- If EPA allows the use of existing herbicides such as 2,4-D and dicamba on biotech

herbicide-tolerant crop varieties, it should establish enforceable restrictions that reduced the likelihood of development of new resistant weeds.

“The evidence is overwhelming that glyphosate and glyphosate-tolerant crops have not been used sustainably to date, and without EPA imposing mandatory obligations, those technologies will become less and less effective,” Jaffe concludes. “Therefore, EPA should use its legal authority to inform farmers and the biotech-seed industry that overuse of a single chemical-based weed-management system is unacceptable and impose a more integrated weed-management system with restrictions on the overuse of glyphosate, 2,4-D and dicamba.”

(*Pesticide & Chemical Policy*, February 08, 2013
Volume: 41 Issue: 07)

MARRONE SUBMITS NEW BIOHERBICIDE FOR EPA REGISTRATION

Marrone Bio Innovations, Inc. (MBI), a global provider of natural pest management products for the agricultural and water treatment markets, announces the submission of a new bioherbicide, MBI-011 EP, to the EPA.

This is the second bioherbicide MBI has submitted for approval to the EPA (MBI-005 bioherbicide was EPA-approved in 2012). MBI-011 EP is a post-emergent burndown herbicide that can also be used as a crop desiccant. It has contact activity and no post-application planting restrictions are expected.

MBI-011 EP is being submitted for control of annual and perennial grass and broadleaf weeds in the agricultural, non-crop and consumer home and garden markets.

Dr. Phyllis Himmel, MBI vice president of research and development, noted how the product got its start when one of MBI's chemists screened for herbicidal activity of medicinal herbs. During the testing of 350 different herbs, an extract of dry long pepper (*Piper longum* L.) fruits showed activity against lettuce seedlings. This active ingredient was identified as sarmentine, a naturally occurring compound that gives black pepper its pungent aroma.

The new bioherbicide offers broad-spectrum control and will provide an alternative to herbicides that are highly prone to resistance. According to the International Survey of Herbicide Resistant Weeds, weeds have developed resistance to 148 different herbicides in 63 crops in 61 countries. "With the continuing and widespread identification of herbicide resistant weeds, we are very excited about submitting this product for registration," remarks Dr. Pam Marrone, CEO. "It has become increasingly clear that no one product can be the ultimate solution to a weed problem and herbicide users need an array of tools to combat weeds. One of the most important benefits we provide users of all our biopesticide products is helping them strengthen their Integrated Resistance Management (IRM) programs. With our new herbicide, we believe we are making a positive contribution in this area." (Crop Life February 27, 2013)

<http://www.croplife.com/article/33165/marrone-submits-new-bioherbicide-for-epa-registration>

COLUMBIA UNIVERSITY STUDY AT HEART OF CHLORPYRIFOS DISPUTE

Central to the clash over EPA's response to the petition from environmental groups to ban chlorpyrifos is a 2011 study by Columbia University researchers that associates exposure to the insecticide with early childhood developmental delays.

The plaintiffs --Pesticide Action Network North America and Natural Resources Defense Council --

are keen to see EPA incorporate the study's findings into their human health assessment for chlorpyrifos, but the agency is questioning key findings of the report.

The study, published in *Environmental Health Perspectives* in April 2011, reports evidence of a link between prenatal exposure to the insecticide and deficits in IQ and working memory by age seven.

The study, however, analyzed women and children that were exposed to multiple chemicals, including other organophosphate pesticides, polycyclic aromatic and lead. Determining whether the outcomes can be attributed to chlorpyrifos is difficult -- something noted by EPA's Science Advisory Panel (SAP) in a July 2012 report focused on scientific issues concerning health effects of the insecticide.

"The SAP has recognized that you can't just single out chlorpyrifos and say it is causing these impacts," Department of Justice senior counsel David Carson told a three-judge panel of the 9th Circuit Court of Appeals on Feb. 4.

The researchers were "looking at all kinds of things that might affect the neurodevelopment of children, not just chlorpyrifos," he added. "It wasn't designed for that."

A hurdle for EPA is that the Columbia researchers have balked at handing over the raw data from the study. The agency says it needs this data to conduct a dose-reconstruction analysis of potential exposures to the women and children in the study to tease out the effects from chlorpyrifos.

"We don't know what the doses were," Carson said. "EPA just has general information."

Of concern to the agency is how exposure to chlorpyrifos can inhibit the enzyme cholinesterase from breaking down acetylcholine, a process that is crucial to nervous system function.

It could be that when the agency gets the data it may find that it is the additive effects of

chlorpyrifos combined with the other pesticides and contaminants that “get you the 10% acetylcholinesterase inhibition level, which is the level EPA has regulated on,” Carson explained. “[But] one of the confounding factors here is the [chlorpyrifos] levels in the blood were so low that they are not the levels at which the 10% inhibition would occur.”

Judge Ronald Gould asked why the researchers have been unwilling to hand over the data.

“I have not been involved in those discussions,” Carson said. “I would presume their concern is they think they might be criticized, but I don’t know. That is not what EPA has in mind.”

EPA wants the data to see if it can make “some heads or tails” out of the additive results of the other pesticides and toxins, Carson explained, and whether “you can get 10% acetylcholinesterase inhibition from that.”

The plaintiffs’ counsel was unconvinced by EPA’s troubles incorporating the study.

The agency “admits that they think chlorpyrifos likely played a role in the longtime neurological effects from early exposures based on that Columbia study,” said Earthjustice attorney Kristen Boyles. “While it is admirable that EPA is trying to get all the data, at some point in time you need to start making decisions based on the information we have and that time has gone.”

Boyles added that the plaintiffs have not contacted Columbia University researchers to seek the data in question and stressed that EPA has more than enough information to respond to the petition and impose a ban on chlorpyrifos.

“It shouldn’t be the case that petitioners need to file a federal mandamus petition to get EPA to act,” she said. “I’m afraid that unless this court orders a date certain ... the delay will continue and we will continue to have this harmful toxic nerve poison out there in the environment.” (Pesticide & Chemical Policy, February 08, 2013 Volume: 41 Issue: 07)

In-State CEU Meetings

Date: March 5-6, 2013

Title: OKVMA Spring Training and Trade Show

Location: Meridian Convention Center

Oklahoma City OK

Contact: Kathy Markham (918)-256-9302

Course #: OK-12-132

www.okvma.com

CEU's:	Category(s):
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4	A
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4	6
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4	10
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2	3a
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2	5
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Date: March 6-7, 2013

Title: Wichita Falls Ranch & Farm Expo

Location: J.S. Bridwell Agriculture Center

Witchita Falls TX

Contact: Fred Hall (940)-716-8610

\$25 Registration Fee

Course #: OK-13-

witchita.agrilife.org

CEU's:	Category(s):
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4	1A
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1	1B
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Date: March 12, 2013

Title: Comanche County Lawn Care Management Workshop

Location: Comanche County Fairgrounds

Prairie Building Lawton OK

\$20 Registration Fee

Contact: Marty New (580)-355-1176

Course #: OK-13-

CEU's:	Category(s):
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3	3a
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1	7A
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3	10
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Date: March 27, 2013

Title: Invasive Plant Management Technical

Webinar: Southwest Region

Location: **Webinar**

Contact: Emily Rindos (406)-994-6832

Course #: OK-13-

www.weedcenter.org

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

Date: April 3, 2013

Title: Texoma Turf and Tree Seminar

Location: MPEC

Wichita Falls TX

Contact: Fred Hall (940)-716-8610

\$25 Registration Fee

Course #: OK-13-

witchita.agrilife.org

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

Date: April 10, 2013

Title: Ewings Irrigation IPM Workshop

Location: Ewing Irrigation

5907 S 107th E Ave Tulsa OK

\$39.00 Registration Fee

Contact: Angi Sullivan (602)-437-9530

www.ewingeducationservices.com

Course #: OK-13-

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

Date: April 11, 2013

Title: Ewings Irrigation IPM Workshop

Location: Ewing Irrigation

5907 S 107th E Ave Tulsa OK

\$39.00 Registration Fee

Contact: Angi Sullivan (602)-437-9530

www.ewingeducationservices.com

Course #: OK-13-

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

Date: April 23, 2013

Title: ADAPCO Mosquito CEU Workshops

Location: Southeast Expo Center

McAlester OK

Must RSVP

Contact: Larry Heller (321)-377-2017

www.myadapco.com

Course #: OK-13-

CEU's: Category(s):
3 8

Date: April 24, 2013

Title: ADAPCO Mosquito CEU Workshops

Location: James Goodwin Health Center

Tulsa OK

Must RSVP

Contact: Larry Heller (321)-377-2017

www.myadapco.com

Course #: OK-13-

CEU's: Category(s):
3 8

Date: August 14, 2013

Title: CTN Educational Workshop

Location: Courtyard Marriott 4301 Highline Park
Blvd, Oklahoma City OK

Contact: Tommy Kezar (512)-829-5114

Course #: OK-13-

www.ctnedu.com

CEU's: Category(s):
1 1A
3 3A
1 6
1 7A
2 7B

ODAFF Approved Online CEU Course Links

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://www.ctnedu.com/oklahoma_applicator.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.state.ok.us/~okag/cps-ceuhome.htm>

ODAFF Test Information

Pesticide applicator test sessions dates and locations for February/March 2013 are as follows:

March		April	
4	McAlester	8	OKC
5	Goodwell	10	Lawton
5	OKC	11	Tulsa
12	Hobart	22	OKC
14	Tulsa	25	Tulsa
19	OKC		
28	Tulsa		

Altus: Western OK State College
 2801 N Main, Room A23

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, Annex Rm.
 920 S. Sheridan Road.

OKC: Oklahoma County Extension Office,
 930 N. Portland.

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

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

Pesticide Safety Education Program