

PESTICIDE REPORTS

Division of Agricultural Sciences and Natural Resources • Oklahoma State University

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VARROA MITES, CHEMICALS AND LACK OF NUTRITION CAUSE BEE DECLINE, USDA SAYS

The USDA recently reported that between April 2015 and April 2016, beekeepers in the U.S. lost 44 percent of their bee colonies.

Jay Evans, who runs the USDA's bee lab in Beltsville, Maryland, has been looking into the causes behind the massive decline in bees in recent years. He said in a radio interview that the leading cause of honeybee deaths can be attributed to parasites, poor nutrition and the chemicals bees are exposed to.

“There are three major stresses on bees: one is biological – different parasites and pathogens, including the varroa mites, and these have been harder and harder to control,” Evans said. “And we know they are transmitting viruses. They’re actually having a huge impact on bees.”

Varroa mites are parasites that suck blood from adult bees and developing brood, which weakens infected honeybees and shortens their life by

causing varroosis. Developing brood may have deformities such as missing legs or wings.

Drifting workers and drones spread the mites from colony to colony. The key to successfully controlling the spread of the parasite is early detection of low levels of varroa mite infestation. However, detecting well developed infestations is easier than detecting those just beginning.

Infestation usually occurs in the late fall through early spring, and because a major mite infestation can lead to the death of an entire bee colony, the deaths may be mistaken to be winter-related.

Similar to other animals, bees require a balanced diet of sugar, protein, vitamins and minerals, and water. The lack of nutrition also plays a crucial role in the death of bees, Evans explained.

“So if they’re placed in an area without forage, they simply can’t collect enough food to build a colony up in the summer,” he said. “There’s also some degree of chemical stress, both chemicals that beekeepers have to use to treat disease and possibly chemicals in the environment that the bees are picking up.”

Because honeybees are crucial to agriculture – pollinating billions of dollars’ worth of crop, researches are continuing to search for solutions to reduce the large number of bee deaths each year and breed tougher bees.

(Crop Protection News July 6, 2016)

<http://cropprotectionnews.com/stories/510954982-varroa-mites-chemicals-and-lack-of-nutrition-cause-bee-decline-usda-says>

GROWERS, DISTRIBUTORS MAY USE REMAINING STOCKS OF BELT INSECTICIDE

The U.S. EPA’s Environmental Appeals Board (EAB) has upheld an earlier EPA decision to cancel registration for Bayer’s insecticide flubendiamide, marketed in the U.S. as Belt, but is allowing sales of existing stocks to growers.

The EAB overruled EPA’s proposed existing stocks determination and will permit distributors and retailers to distribute and sell remaining flubendiamide inventories, and permit growers to continue using product consistent with label use directions.

While Bayer intends to comply with the order, it will fully review the EAB’s decision and evaluate its options going forward.

Today’s ruling follows an earlier appeal to the EPA’s Administrative Law Judge, who ruled in favor of the Agency after excluding any documentary evidence and testimony regarding the scientific issues raised by EPA’s actions on flubendiamide.

“Bayer maintains the EPA’s actions on flubendiamide are unlawful and inconsistent with sound regulatory risk assessment practices,” says Dana Sargent, Bayer’s Vice President of Regulatory Affairs. “The science supporting the registration of flubendiamide may be complex, but it is solid, and it’s unfortunate that we were denied the opportunity to argue the scientific merits of our case. You cannot use the regulatory process as a shield to avoid engaging in meaningful dialogue, but that is exactly what the EPA has done.

“Since we first learned of the EPA’s actions on flubendiamide a few months ago, we have tried our

best to argue on behalf of our industry and the many growers who depend on these products for sustainable pest control. In the end it is they who will be most impacted by this decision.”

Sargent continues: “The ruling was narrowly focused on process issues around the registration. It is notable that it did not weigh in on the lawfulness of EPA’s cancellation nor did it consider the fundamental science underpinning Bayer’s argument.

“I want to express Bayer’s deep appreciation to everyone who supported us during this process, with a special thank you to Crop Life America, Agriculture Retailers Association, American Soybean Association, and all the groups that signed amici in support of a sound science regulatory process.”

Growers, retailers and distributors with questions about this issue, should contact their local Bayer Field Sales Representative, or call 1-866-99-BAYER (1-866-992-2937). (CropLife August 1, 2016)

<http://www.croplife.com/crop-inputs/insecticides/growers-distributors-may-use-remaining-stocks-of-belt-insecticide/>

TERMINIX OFFERS \$87 MILLION TO DELAWARE FAMILY SICKENED AT VIRGIN ISLANDS RESORT

Terminix has offered to pay \$87 million to the Delaware family seriously sickened by a pesticide at a U.S. Virgin Islands resort last year, the company said in an earnings report Thursday.

About \$3 million related to the family's claims have already been paid, and a "tentative settlement agreement" has also been reached relating to any of the civil claims, according to ServiceMaster Global Holdings, the Memphis-based company that owns Terminix.

In addition, the company in March said it would pay \$10 million in fines and restitution for using the banned chemical methyl bromide — a highly noxious and odorless gas — at units at the St. John resort where the family was vacationing in March 2015.

The Environmental Protection Agency prohibited the chemical, which can lead to nervous system and respiratory damage, for residential use in 1984. American growers, however, have been able to use it in certain cases on their fields.

Stephen Esmond, wife Theresa, and their teenage sons fell ill not long after checking into their rooms, which was above a fumigated unit. They were brought to a Philadelphia hospital to recover from severe respiratory trauma, according to NBC Philadelphia.

The EPA later found the toxic pesticide was used several times in the past at the Sirensa resort. The resort's owner, Sea Glass Vacations, has said it was unaware that Terminix was using the banned chemical and said it ended its contract with the company.

Meanwhile, the U.S. Department of Justice opened a criminal investigation into the case.

ServiceMaster said its plea agreement is subject to court approval next month, and "if approved will resolve the federal criminal consequences associated with the DOJ investigation."

A Terminix spokesman declined to comment about the case Thursday, and referred any questions about it to the company's second-quarter earnings report.

Attorneys for the Esmond family did not immediately respond to a request for comment.

The DOJ said the family suffered "debilitating injuries." The two children were placed into medically induced comas and were having trouble moving, according to reports last year. Their latest conditions were not immediately known. (NBC NEWS, July 28, 2016)

<http://www.nbcnews.com/news/us-news/terminix-offers-pay-87m-delaware-family-sickened-virgin-islands-resort-n618796>

US COURT REJECTS BID TO REQUIRE INERT INGREDIENT DISCLOSURE

A federal judge has dismissed a lawsuit brought by a coalition of environmentalist and public health groups that sought to force the US EPA to require disclosure of inert ingredients on pesticide labels. US District Court Judge William Orrick suggested that the plaintiffs "may well be on the right side of the policy argument", but concluded that the Agency has discretion under federal pesticide law to opt not to force disclosure of inert ingredients.

The coalition sued the EPA in July 2015, challenging the Agency's decision to abandon a plan that would have forced pesticide registrants to list inert ingredients on product labels. The suit has its origins in a 2006 petition by the coalition, led by the Center for Environmental Health, which asked the EPA to disclose inert ingredients.

The coalition identified more than 350 inert ingredients considered hazardous under federal law and said that the Agency should mandate disclosure.

Attorneys general from more than a dozen states, including California and New York, also petitioned the EPA in 2006 to require disclosure of inert ingredients.

In September 2009, the Agency granted the petitions and began a rulemaking effort, proclaiming that it would "effect a sea change" in how inert ingredient information was made available to the public. The EPA outlined two possible approaches in December 2009. The first approach would have required registrants to list the identities of all potentially hazardous inert ingredients on product labels and the second called for all or most inert ingredients to be labelled.

The EPA took public comments on the proposals until April 2010, but ran into strong criticism from the pesticide industry and left the proposal in limbo. CropLife America and other industry interests questioned the Agency's authority to require inert ingredient disclosure. Critics also suggested that mandatory disclosure would harm pesticide manufacturers by releasing valuable intellectual property to competitors and do little to help the public make informed choices about the safety of pesticides.

In May 2014, the EPA amended its 2009 response to the petition, explaining that it had changed course and decided to "review inert ingredients currently listed for use in pesticides, update that list, establish criteria for prioritisation, and select top candidate inert ingredients for further analysis and potential action".

The coalition filed suit in July 2015 in the US District Court for the Northern District of California, arguing that the EPA's action violated the Federal Insecticide, Fungicide and Rodenticide Act and the Administrative Procedure Act.

Judge Orrick disagreed and said that the EPA’s decision was “grounded in the statutory text and supported by valid reasoning”. The plaintiffs are “understandably frustrated that the rulemaking process they initiated almost ten years ago has generated no concrete action”, he wrote in the ten-page order. “But the EPA is not mandated to require disclosure of the inert ingredients at issue. Its decision to pursue non-rulemaking alternatives to address the issue is not arbitrary or capricious.” . (Pesticide & Chemical Policy/AGROW, July 8, 2016)

FLORIDA ZIKA CASES LIKELY CAUSED BY LOCAL MOSQUITOES

Four cases of Zika infection in Florida are very likely to have been caused by mosquitoes there, the State Department of Health said Friday — the first documented instances of local transmission in the continental United States, the New York Times reported.

“Zika is now here,” Dr. Thomas R. Frieden, the director of the Centers for Disease Control and Prevention, said at a news briefing.

The C.D.C. and Florida officials said that for now, the area of concern is limited to one square mile in the Wynwood neighborhood of Miami, a gentrifying area with restaurants and art galleries just north of downtown.

Health authorities are not advising people to stay away from the neighborhood, Dr. Frieden said. The four people appear to have been infected in early July; since then, mosquito control efforts have been stepped up in the area, and additional cases have not been identified. (PCT Online, July 29, 2016) <http://www.pctonline.com/article/florida-zika-local-mosquitoes/>

COURT SIDES WITH US EPA OVER PESTICIDE DRIFT PROTECTIONS

A federal appeals court has rejected a bid by environmentalists and farmworker advocates to compel the US EPA to impose interim no-spray buffer zones for drift-prone pesticides. A three-judge panel of the US Court of Appeals for the Ninth Circuit concluded that “substantial evidence” supports the EPA’s decision to deny the request by the Pesticide Action Network-led coalition to require the uniform buffer zones.

The July 5th court ruling ends a dispute centered on the EPA’s obligations under the Food Quality Protection Act (FQPA), which required the Agency to set standards in 2006 to protect children from aggregate exposures to pesticides.

The coalition of NGOs filed a petition with the EPA in 2009, noting that the Agency had failed to include any assessment of risks from pesticide drift when it set the FQPA standards. The petition called on the EPA to conduct pesticide-specific drift assessments and to impose measures necessary to protect children from drift.

The EPA acknowledged in March 2014 that it had failed to assess drift and agreed to complete the assessments, but rejected the coalition’s request for interim, no-spray buffer zones for organophosphate and N-methyl carbamates around schools, rural homes, parks, daycare facilities and other areas where children congregate. The requested buffer zones were 60 ft (18m) for ground spraying and 300 ft (91m) for aerial applications.

The petitioners challenged that decision in the Ninth Circuit, arguing that the EPA’s actions failed to adequately protect children in violation of the FQPA.

But the Court sided with the EPA, concluding that the record “adequately supports” the Agency’s conclusion that the “imposition of uniform buffer zones is not the most ‘scientifically appropriate’ method for mitigating the risk of exposure to pesticide drift”.

The Court noted that the record “generally suggests” that the risk of exposure to pesticide drift depends on an array of factors, including pesticide toxicity, the method of pesticide application, the size of pesticide droplets, and weather conditions. “Based on this evidence, the EPA could reasonably conclude that petitioners’ proposal of uniform buffer zones for a large number of pesticides would not adequately address the variable risk of exposure to pesticide drift without unnecessarily curtailing some safe pesticide use,” the Court explained.

Forcing the EPA to impose the uniform buffer zones would also divert limited Agency resources from the risk assessment process and disrupt the EPA’s established process for evaluating the safety of pesticide registrations and tolerances, the Court said in its ruling.

The record fully supports “the EPA’s determination that, as a matter of science and policy, the immediate imposition of interim buffer zones is not an appropriate means of mitigating the risk of children’s exposure to pesticide drift”, the Court concluded. (Pesticide & Chemical Policy/AGROW, July 8, 2016)

SCIENTISTS: HERBICIDE RESISTANCE PRE-DATES GMO TECHNOLOGIES BY 40 YEARS

You may think weeds resistant to herbicides are a new phenomenon linked to the overuse of glyphosate in genetically engineered crops, but nothing could be further from the truth. Next year will mark the 60th anniversary of the first reports of herbicide-resistant weeds, while this year marks only the 20th anniversary of glyphosate-resistant crops.

The first known report of herbicide-resistance came in 1957 when a spreading dayflower (*Commelina diffusa*) growing in a Hawaiian sugarcane field was found to be resistant to a synthetic auxin herbicide.

One biotype of spreading dayflower was able to withstand five times the normal treatment dosage. That same year wild carrot (*Daucus carota*) growing on roadsides in Ontario, Canada was found to be resistant to some of the same synthetic auxin herbicides.

Since then, 250 species of weeds have evolved resistance to 160 different herbicides that span 23 of the 26 known herbicide mechanisms of action. They are found in 86 crops in 66 countries, making herbicide resistance a truly global problem.

“Given all the media attention paid to glyphosate, you would think it would have the greatest number of resistant weed species,” says David Shaw, Ph.D., a Mississippi State University weed scientist. “Though there are currently 35 weed species resistant to the amino acid synthesis inhibitor glyphosate, there are four times as many weed species resistant to ALS inhibitors and three times as many resistant to PS II inhibitors.”

Scientists say what is unique about glyphosate resistance is the severity of selection pressure for resistance development. More than 90% of soybean, corn, cotton and sugar beet acres in the U.S. are glyphosate tolerant and receive glyphosate treatments – often multiple times per year.

“The sheer size of the crop acreage impacted by glyphosate-resistant weeds has made glyphosate the public face for the pervasive problem of resistance,” says Shaw. “But resistance issues are far broader than a single herbicide and were around long before glyphosate-resistant, genetically engineered crops were even introduced.”

Research shows that resistant weeds can evolve whenever a single approach to weed management is used repeatedly to the exclusion of other chemical and cultural controls – making a diverse, integrated approach to weed management the first line of defense. Many growers have had great success fighting resistance by adopting a broader range of controls.

One example is found in the experiences of U.S. cotton growers in the southern U.S. After years of relying on glyphosate for weed control, resistant Palmer amaranth (*Amaranthus palmeri*) began to overrun crops and caused yields to plummet. Today integrated weed management programs that use a diverse range of controls have become commonplace in cotton, despite the higher cost. Growers are using cover crops, hand-weeding, tillage, weed seed removal and herbicides with different mechanisms of action in order to keep Palmer amaranth at bay.

There have been tradeoffs. Additional herbicides, labor and fuel have tripled the cost of weed control in cotton. In addition, increased tillage has raised concerns about soil erosion from water and wind. But for now, the crop has been preserved.

“Although diversification is critical to crop sustainability, it can be difficult to make a decision to spend more on integrated weed control strategies,” says Stanley Culpepper, Ph.D., a weed scientist at the University of Georgia. “As a result, many of the most successful diversification efforts can be found in crops like cotton where change became an imperative.”

Culpepper says that in addition to costs, another barrier to adoption of integrated weed management is the belief by some that new types of herbicides will be invented to take the place of those no longer effective on resistant weeds. But the HPPD-inhibitors discovered in the late 1980s for use in corn crops are the last new mechanism of action to make its way out of the lab and into the market.

“It would be naïve to think we are going to spray our way out of resistance problems,” Culpepper says. “Although herbicides are a critical component for large-scale weed management, it is paramount that we surround these herbicides with diverse weed control methods in order to preserve their usefulness – not sit back and wait for something better to come along.” (CropLife, July 12, 2016) <http://www.croplife.com/crop-inputs/scientists->

STUDY: FALL WEED CONTROLS CAN MAKE SIGNIFICANT IMPACT ON GLYPHOSATE-RESISTANT PALMER AMARANTH

An article published in the latest issue of the journal *Weed Science* shows that adopting harvest-time and post-harvest weed controls can reduce the prevalence of glyphosate-resistant Palmer amaranth, one of the most problematic weeds in soybean, cotton and corn crops.

Scientists with the University of Arkansas and the University of Western Australia recently conducted a three-year field experiment to determine the impact of in-crop herbicides and fall weed management practices on Palmer amaranth. Researchers compared glyphosate-only weed control with preemergence herbicides, a residual glufosinate applied postemergence, and a variety of harvest-time and post-harvest management options – used alone or in combination.

The harvest-time and post-harvest controls included spreading crop residues or incorporating them into the soil, using cover crops, adopting windrowing with or without burning, and removing crop residues that contain weed seeds from the field.

The study showed that three controls in particular made a significant impact on the population density of Palmer amaranth – planting cover crops, removing crop residues and incorporating crop residues into the soil. The effect of these fall controls on seed production, though, was inconsistent across the three years of the study.

When preemergence herbicides were added as part of an integrated control program, both Palmer amaranth population density and subsequent seed production were significantly reduced compared to

a glyphosate-only program. The glufosinate-containing residual herbicide program also proved to be superior to the glyphosate-containing residual program in reducing Palmer amaranth seed production.

“Our study shows that farmers diversifying their weed management program can reduce both the prevalence of resistant weeds and the size of the soil seedbank, which can extend the useful life of the herbicides they rely on for weed control,” says Nicholas Korres, Ph.D., of the University of Arkansas. (CropLife July 28, 2016)

<http://www.croplife.com/crop-inputs/herbicides/study-fall-weed-controls-can-make-significant-impact-on-glyphosate-resistant-palmer-amaranth/>

INDUSTRY SEEKS TO EXTEND US EPA CHLORPYRIFOS DEADLINE

Environmentalists are urging a federal court to reject requests by the US EPA and the pesticide industry to grant the Agency more time to decide whether to ban agricultural uses of the organophosphate insecticide, chlorpyrifos.

The EPA is under a court order to issue a final decision on chlorpyrifos by the end of this year, but says “extraordinary circumstances” warrant more time. The controversy stems from a petition filed in 2007 by Pesticide Action Network North America (PANNA) and the Natural Resources Defense Council (NRDC) seeking a ban on the insecticide because of concerns about health risks to children and farmworkers.

The US Court of Appeals for the Ninth Circuit in July 2015 ordered the EPA to respond to the petition, prompting the Agency last October to issue a proposal to revoke tolerances for chlorpyrifos. Tolerance revocation would spell the end of agricultural uses of chlorpyrifos and would have ripple effects across the pesticide and agricultural

industries. US farmers use an estimated 5-6 million lbs (2,268-2,722 tonnes) of the insecticide annually on more than 50 food crops, including almonds, apples, citrus fruits, maize and strawberries. In its revocation proposal, the EPA cited concern that cumulative exposures from food and drinking water may be above safe levels in some areas of the country.

But last month, the Agency requested that the deadline be shifted to June 30th 2017, suggesting that it needed an additional six months to complete ongoing reviews of exposure information and its human health assessment for the insecticide. The industry association, CropLife America (CLA), which has been allowed to intervene in the underlying lawsuit, says that six months will not be enough and has asked the Court to give the EPA an additional year to complete its review.

PANNA and the NRDC say that the Agency has dragged its feet on the issue for far too long. “In support, EPA asserts an interest in perfecting the scientific basis for banning chlorpyrifos, but the time for further scientific assessments must give way to action where such grave risks of brain damage to children are at stake,” according to the environmentalists. “It is time to say enough is enough. The requests for further delay should be denied.”

The science is clear that chlorpyrifos does not meet the Food Quality Protection Act’s (FQPA) requirement that the EPA establish and maintain tolerances for a pesticide only if the Agency can find it is “safe to allow” the agrochemical on food, the environmentalists contend. “Based on the evidence of harm to children, even without fully accounting for the prenatal brain impacts, EPA has determined that it cannot make this safety finding for chlorpyrifos,” PANNA and the NRDC state in their July 27th filing with the Court. “Yet chlorpyrifos remains on the market, on our food, and in our drinking water.”

The petitioners also took aim at CLA's request, criticising the group for submitting declarations from growers worried about the potential for increased costs if chlorpyrifos were pulled from the market. "These declarations, which are thin on details and lacking in substantiating documentation, are legally irrelevant to the proposed revocation of tolerances under the FQPA, which prohibits exposing children to unsafe pesticide residues based on economic considerations," according to the environmentalists. "Congress declined to inject a cost/benefit inquiry into the FQPA, yet this is precisely what CropLife is asking this Court to do in its request for twice the additional delay sought by EPA." (Pesticide & Chemical Policy/AGROW, July 29, 2016)

CEU Meetings

Date: August 23, 2016

Title: Mosquito Control Vectors/Disease/Control

Location: Bixby OK

Contact: Doug Carroll (817) 600-5353

Course #: OK-16-095

www.clarke.com

CEU's:	Category(s):
3	8

Date: October 5, 2016

Title: OKVMA Fall Conference, Training and Trade Show

Location: Hard Rock Hotel & Convention Center
Catoosa OK

Contact: Kathy Markham (918) 256-9302

Course #: OK-16-094

www.okvma.com

CEU's:	Category(s):
4	A
5	3A
5	5
5	6
5	10

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://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-ceuhome.htm>

ODAFF Test Information

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

August		September	
5	OKC	2	OKC
11	Tulsa	8	Altus
18	Enid	15	Tulsa
19	OKC	16	OKC
25	Tulsa	29	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**