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In This Issue

Unintended Herbicide Injury on Trees: A Growing Concern

Overall, certified pesticide applicators do an excellent job keeping pesticides on target to protect crop yield and the aesthetics of various landscape settings. But in recent years, there have been increasing reports of what is believed to be herbicide damage on trees found particularly on state and private lands bordering agricultural fields. Additionally, there have been several mature trees severely injured or killed in southern Illinois and herbicide drift is strongly suspected to have played a role. In multiple cases, testing from Illinois Department of Natural Resources (IDNR) and Illinois Department of Agriculture (IDA) has confirmed the presence of the herbicides dicamba and/or 2,4-D in damaged foliage samples.

How are trees being affected?

Trees are showing injury symptoms of or like that of plant growth regulator herbicides. These PGR herbicides mimic various growth regulating compounds found in plants and include dicamba, 2,4-D, triclopyr, MCPP, MCPA, clopyralid, fluroxypyr, and picloram. Various formulations of these are available for use by both private and commercial applicators and are frequently used in commercial agriculture and turfgrass maintenance.

Sycamore leaves showing symptoms of PGR herbicide injury, Travis Cleveland, University of Illinois.

Illinois Extension
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Typical injury symptoms of these growth regulator herbicides include leaves that are cupped, twisted, puckered, or curled. While some plant species (such as redbud) are known to be very sensitive to dicamba and 2,4-D, less is known about the sensitivity of other species. These herbicides can be toxic to broadleaved plants at ultra-low concentrations; 1/800 of the labeled rate can damage grapes. We also know that drift can travel long distances from the application site.

Herbicide injury on redbud, Travis Cleveland, University of Illinois.

While it is true that often healthy, mature trees that inadvertently receive small amounts of pesticide drift in a single event will often grow out of the injury symptoms, the herbicide should not be on the trees in the first place. Even if an injured tree isn't killed right away, the adverse effects could be long lasting. Multiple drift events can have cumulative, detrimental effects by causing prolonged stress to the plant.

Chronic exposure combined with predisposing stress factors such as drought, drainage problems, soil compaction, or pest problems may lead to tree decline or death. According to the Illinois Forestry Association's (IFA) issue page on Off-Target Herbicide Drift, "Foliage damage appears to have contributed to a decline in health and increased mortality of many of our tree and plant species including, but not limited to oaks, elms, maples, redbud, honey locust, hickories, flowering dogwood, and sycamores." Their members have documented damage in multiple counties.

Why is this an issue now?

IDA inspectors and University of Illinois specialists believe the environmental conditions experienced in recent years (wet springs followed by hot, dry summers) have acted as an additional stress to trees. Adding herbicide injury to already stressed trees may just be the tipping point.

Dicamba and 2,4-D are now applied to MANY more acres than previously due to their use on tolerant soybean varieties. Also, early spring applications coincide with development of trees and other ornamentals. Since drift can't often be seen with the naked eye, the applicator may not even know it is occurring. Therefore, drift prevention is key.

Multiple groups have been tracking herbicide injury to trees for the past several years. Recent editions of "Illinois Forest Health Highlights" written annually by Dr. Fredric Miller, Illinois Forest Health Specialist, have included a section on herbicide drift damage. Additionally, a statewide survey was conducted to ascertain how extensive the problem is and to better understand contributing factors. The 2022 report can be found here.

In 2022, the Prairie Rivers Network released their report, "Herbicide Drift and Chemical Trespass on Natural Landscapes & Habitats" for the Illinois Nature Preserves Commission. The intent was to provide a summary of legislative and monitoring efforts related to the current issues of herbicide drift. The report documented off-target impacts to natural areas and focused on 2,4-D and dicamba. The report mentioned there are five groups surveying, monitoring, and reporting tree damage from herbicide exposure. Oaks, redbuds, and sycamores are three species frequently showing damage, but 83 were reported with

herbicide damage. Their website features pictures of injury symptoms and encourages citizen reporting to help document potential herbicide injury to trees and other broadleaf plants. Guidelines are provided for their online reporting system.

Most recently, the May issue of Outdoor Illinois featured the article, "Herbicide Drift Threatens Habitat Quality". This public awareness piece describes what herbicide damage looks like and encourages readers to look for it.

Injury in larger trees may not be noticed due to tree size and location. Trees often go overlooked as background scenery by those who aren't interested or maybe those who aren't involved in forestry or landscaping. While trees in general may not generate the income that a grain crop can, they provide many benefits. Trees are essential to our ecosystem.

What is being done and what are the obstacles?

To help keep these herbicides on target, state specific restrictions have been put in place and labels have been revised. But more attention to this issue is needed as proposed legislation lingers.

IDA is tracking and investigating herbicide misuse complaints on trees through all formal pesticide misuse complaints they receive that result in investigations. Misuse would include any label violation or misapplication, such as application drift onto not-target areas. In 2022, of 384 total misuse complaints 119 were determined to be dicamba related and 155 were tree related (including 41 complaints received from IDNR). All complaints in Illinois are forwarded to the United States Environmental Protection Agency (US EPA). To help stress the importance of preventing unintended herbicide injury on trees, stricter penalties are being considered for misuse cases where trees are affected.

Herbicide injury often isn't easy to diagnose as disease, insect, and low temperature injury can cause similar symptoms. Additionally, research is needed to determine what factors are contributing to these recent drift issues. IDA staff has noted that a challenging finding is the occurrence of two trees growing side by side but only one with injury symptoms. This makes it very difficult for IDA to pinpoint the source of the injury as patterns play a large role in diagnosis. Herbicide injury cannot be known with absolute certainty without tissue analysis confirming the herbicide or its metabolites is present. Tissue analysis is determined on a case-by-case basis. It is very expensive and not all laboratories use identical analytical techniques. Results can be difficult to interpret with respect to the degree of damage attributable to the herbicide when present. Research documenting the effects of various herbicide concentrations on trees of any species is generally lacking.

Industry groups support the message that applications need to stay on target. For dicamba applications on soybean, temperature and calendar restrictions among other label changes have been put in place to reduce drift via volatilization. It is the responsibility of the applicator to ensure that label directions and any additional restrictions are read, understood, and followed. No one wants herbicide drift to occur. Generally, the negative outcomes of herbicide drift far exceed any positive outcomes.

Unintended injury to trees can result in even larger issues.

Off-target damage can be expensive and time consuming not only for the applicator and the landowner, but also for attorneys and IDA staff. IDA's pesticide misuse investigations take time and resources away from other projects with 1 field inspector conducting interviews

and collecting samples, and then 3 staff members reviewing each case in the office. No one has time for drift. Prevention takes less time.

Frequent misuse may lead to additional laws and regulations. Last year, HB 4363 Dicamba Ban was introduced which would ban all dicamba use in the state. To bring awareness to the issue and rally support, affected property tours were held during National Pollinator Week. Not only were members of the public Invited, but also reporters, impacted individuals, state and local elected officials, representatives from various conservation and health organizations, and University of Illinois Extension. Tour hosts partnered with Illinois Public Interest Research Group and Environment Illinois on their campaign. This bill died in committed but was then proposed again in January 2023. This ban would include not only uses on corn and soybean but also uses on lawns, athletic turf, pastures, and roadsides. The effects of such a ban are wide reaching. Weed managers are dependent on ALL available tools with the prevalence of herbicide resistance challenges. Simply put, if we want to continue to use these herbicides, we need to be the best stewards possible.

What can applicators do to prevent potential injury to trees?

It is of utmost importance that pesticide applicators take steps to minimize drift. Careless damage to personal property simply cannot be tolerated. IDNR has an online tool available for use by landowners, producers, and pesticide applicators to increase awareness of sensitive areas that include natural areas, Illinois Nature Preserves, state parks, and other sites. This "Natural Resources Awareness Tool for Applicators", found at https://dnr.illinois.gov/conservation/chemical-drift-awareness-areas.html, was created in response to plant injury reports (especially on oak trees) that could potentially be attributed to drift from applications to nearby agricultural fields. The goal is that pre-application planning can prevent off-target drift.

Specific steps applicators can take include:

- Carefully read and follow all label directions.
- Note the proximity of sensitive areas and vegetation. Online tools such as "FieldCheck" and IDNR's "Natural Resources Awareness Tool for Applicators" should be used. Applications to soybean are prohibited when the wind is blowing toward any Illinois Nature Preserves Commission site that is adjacent to the proposed field of application. Additionally, soybean applications are prohibited when the wind is blowing toward an adjacent residential area.
- Talk with neighbors to communicate where sensitive plants and areas are. Be courteous, sincere, and respectful.
- Use buffer strips of untreated vegetation or windbreaks.
- If winds are shifting, stop an application and finish later when conditions are favorable.
- Measure wind speed and direction at the boom before applying.
- Do not apply when winds are less than 3 mph or greater than 10 mph.
- Use drift reduction adjuvants and nozzles to reduce the likelihood of drift occurring.
- Check for the presence of an inversion before applying.
- Familiarize yourself with your herbicide's expected injury symptoms on targeted weeds.
- Follow up after applications and look for injury on nearby non-target trees and other plants. Not looking for it does not

mean it's not there. Recognition is part of the battle.

Lastly, applicators should educate themselves on this issue. IFA provides an excellent summary of the whole situation on their website where they discuss why the damage is occurring now and provide helpful links for landowners and concerned citizens. They too provide a somewhat similar yet different list of ways that applicators can help prevent damage to trees.

For an excellent video that summarizes what to look for when diagnosing herbicide injury on trees with comparisons of other factors that cause similar symptoms, please view, "Recognizing Herbicide Damage to Trees Training" by University of Illinois Extension Forester, Chris Evans. Another video to check out is my webinar, "Safe Use of Herbicide in Natural Settings".

In summary, the general public is increasingly aware of herbicide drift and damage; damage on trees is being noticed more than ever before. Applicators must be mindful that neighboring landscape trees and timber stands can be affected by their applications. Herbicides are important tools for combatting weeds. Users are reminded to take careful steps to prevent drift from occurring.

Michelle Wiesbrook

2023 Agrichemical Container Recycling Program Schedule

The Illinois Department of Agriculture has announced the single-day collection sites and dates for the 2023 Pesticide Container Recycling Program. Dates and locations are available on the Illinois Department of Agriculture website. https://www2.illinois.gov/sites/agr/Environment/Agrichemicals/Pages/Agrichemical-Container-Recycling-Program.aspx.

Year-round disposal is available at two permanent collection sites. Please call to ensure the facility will be open.

- Griggsville, IL. Logan Agri Sry, Inc., contact Troy Kennedy, 217-833-2375
- Lawrenceville, IL. Klein Flying Service, contact Robert Klein, 812-890-6685
- Carmi, IL. Klein Flying Service, contact Bri Klein, 812-890-8605

The Illinois Department of Agriculture is encouraging farmers and agrichemical facilities to save their empty agrichemical containers. Beginning in late July and continuing in August, single-day sites throughout the state will collect containers. The containers will be recycled to make shipping pallets, fence posts, drainage tubing, plastic lumber and other useful products. Over 1.6 million pounds of plastic have been collected since the program started more than 20 years ago.

The Agrichemical Container Recycling cites will accept: # 2 HDPE plastic from small bottles to 5-gallon containers, drums over 5-gallons, and mini-bulk containers that are caged or free standing. Collection sites will accept only agrichemical containers that are clean and dry. Participants are responsible for rinsing them and removing all caps, labels, booklets and foil seals.

Agrichemical containers rinsed and ready to recycle, Travis Cleveland, University of Illinois

Preparing pesticide containers for recycling:

Rinsing right after use is the best way to ensure a clean container. Depending on what system fits your operation, you can either triple rinse or pressure rinse your containers. Your local agricultural chemical dealer can give you more information about pressurized rinse systems.

Triple Rinsing

1. Fill the empty container about 20% full with water.
2. Replace the cap securely and shake the contents to rinse all inside surfaces.
3. Pour rinse water into the spray tank and drain for at least 30 seconds.
4. Repeat steps 1-3 twice more until the container is clean.
5. Inspect the container (inside and out) for formulation residues. Repeat as needed.

Pressure Rinsing

1. Use a special nozzle attached to a water hose.
2. Hold the container upside down over the spray tank with the cap removed. Puncture the side of the container with the pointed nozzle.
3. Pressurized water cleans the inside surfaces while the rinsate flows into the spray tank.
4. Rinse for 30 seconds or longer while rotating the nozzle to rinse all surfaces.
5. Inspect the container (inside and out) for formulation residues. Repeat as needed.

Additional instructions

- **# 2 HDPE plastic from small bottles to 5-gallon containers** can be placed in clear plastic bags or strung together with baler twin in groups of 25 each.
- **Drums over 5 gallon** - cut off top and bottom and cut down the side top to bottom
- **Caged mini-bulk containers** – cut off top and bottom, cut into 4 separate sides
- **Free standing mini-bulk containers** – cut into 1foot square pieces
- Discard the cap, foil seal, labels, fittings, and any metal from the container since they will not be accepted for recycling
- Please notify the Department of Agriculture's Pesticide Hotline at 1-800-641-3934 if your facility has 20 or more mini-bulk containers that are in good to excellent condition before preparing to be recycled

The program is a cooperative venture between the Illinois Department of Agriculture, Agriculture Container Recycling Council, GROWMARK, Inc., Illinois Fertilizer and Chemical Association, G. Phillips and Sons, L.L.C., Illinois Farm Bureau, and the University of Illinois Extension.

Additional information can be found on the IDOA website at https://agr.illinois.gov/, click on the "Environment" tab and then "Agrichemicals". To obtain a free brochure about the program, call the Illinois Department of Agriculture toll-free at 1-800-641-3934.

Travis Cleveland

2023 Clean Sweep Collection Dates Expected Soon

Each year, the Illinois Department of Agriculture, in cooperation with the Illinois Department of Public Health and with funding from the US EPA, conducts agricultural/structural pesticide clean sweep program collections in various counties in the state. The number of collection sites is dependent on the availability of funds. The collections are open to farmers, retired farmers, nursery owners, private pesticide applicators, structural pest control applicators and landowners who inherited unwanted agricultural pesticides with their property. Participants do not need to reside in the collection site's county. However, they must be willing to travel to the collection site on that date.

IDOA has not yet released a schedule for 2023 Clean Sweep collections. The collection events typically occur in late summer. Information on the 2023 collections should be available on their website soon. Check their website frequently for updates. As in past years, all participants will be required to register the products they plan to dispose of. Registration is required to give the waste disposal contractor time to prepare for the different kinds of materials that will need to be handled. Forms can be obtained either by calling the Illinois Department of Agriculture's Pesticide Hotline at 1-800-641-3934, or online at https://agr.illinois.gov/pesticides/pesticide-clean-sweep-program.html

The "Clean Sweep" program began in 1990 in Illinois. Since the inception of the program, the Department has held 52 collection events through the state and collected 626,669 pounds of material from 2,196 participants.

Travis Cleveland

Register for EPA's Webinar on Bilingual Pesticide Labels

The U.S. Environmental Protection Agency (EPA) is hosting a public webinar on Thursday, June 15, 2023, from 5:00pm to 7:00pm EST to obtain input from the public on ways to make bilingual pesticide labeling accessible to farmworkers as required by the Pesticide Registration Improvement Act of 2022 (PRIA 5).

The majority of our nation's two million farmworkers speak Spanish. This effort will advance environmental justice by ensuring those farmworkers have access to important health and safety information on pesticide labels in their native language. During the webinar, EPA will provide a brief overview of the PRIA 5 requirements on bilingual pesticide labeling and milestones. PRIA 5 amended the Federal Insecticide, Fungicide, and Rodenticide Act, requiring Spanish language translation for key health and safety sections of the end-use pesticide product labels where the translation is available in the EPA Spanish Translation Guide for Pesticide Labeling. The Spanish language translation must appear on the pesticide product container or on a link to the translation via scannable technology or other electronic methods readily accessible on the product label. These translations are required on a rolling schedule from December 2025 to December 2030 depending on the type of product and the toxicity category. PRIA 5 also requires EPA to begin to seek stakeholder input on ways to make bilingual pesticide labeling accessible to farmworkers by June 30, 2023, and to implement a plan to ensure that farmworkers have access to the bilingual pesticide labeling by December 2025.

As EPA determines the next steps in developing a plan to make bilingual pesticide labels accessible to farmworkers, the Agency is interested in feedback on the following items.

- What communication approaches, processes or strategies should the Agency consider to ensure bilingual pesticide labels are accessible to farmworkers? What specific approaches should the Agency avoid or adopt when implementing efforts to best ensure access by farmworkers to bilingual pesticide labels?
- What technologies, mobile applications, and internet access should the Agency consider? Would web-based labels be accessible to farmworkers? How should the Agency overcome internet connectivity issues that some farmworkers may face?
- How can the Agency effectively share health and safety information on pesticide labels with farmworkers? What should on-the-ground logistics look like? Which entities (e.g., community-based organizations) should the Agency work with to provide label information to farmworkers?
- As the Agency implements actions to meet this requirement, how can EPA effectively increase farmworker access to bilingual pesticide labels (e.g., communication plans, outreach strategies)?

Attendees have two options for webinar participation – listen only or listen and speak during the webinar to provide recommendations to EPA. Speakers will have up to three minutes to provide recommendations to the Agency depending on the number of participants interested in providing remarks. Speakers must register for the event by Friday, June 9th. Attendees can register any time until the start of the webinar as a listen only participant. Further logistics and information will be provided to participants through the Eventbrite system. Although "tickets" are required, the event is free.

Following the webinar, EPA will open a comment period for 60 days through a Federal Register Notice to obtain written input on ways to make bilingual pesticide labeling accessible to farmworkers. Further information about the public docket will be provided during the event and in future EPA announcements.

Stakeholders are encouraged to share this announcement with their networks. This webinar will be held in English with Spanish and American Sign Language interpretation services. For general inquiries about this webinar, email: OPPbilinguallabels@epa.gov.

One additional note, readers are encouraged to peruse the Spanish Translation Guide for Pesticide Labeling which is currently only 17 pages long and provides insight as to what types of statements will be added to labels.

EPA press release, May 18, 2023, modified slightly by Michelle Wiesbrook

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