Home, Yard, and Garden Pest Newsletter

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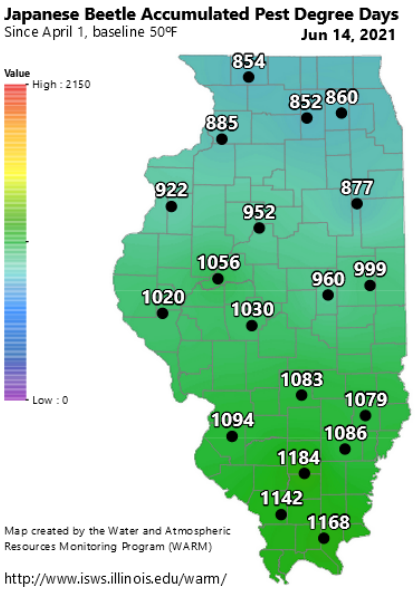

Modified Growing Degree Days (Base 50º F, March 1 through June 13)

Insect development is temperature dependent. We can use degree days to help predict insect emergence and activity. Home, Yard, and Garden readers can use the links below with the degree day accumulations above to determine what insect pests could be active in their area.

GDD of Landscape Pests
GDD of Conifer Pests

Degree day accumulations calculated using the Pest Degree-Day Calculator (a project by the Department of Crop Sciences at the University of Illinois and the Illinois Water Survey).

Station Location	Actual Total	Historical Average (11 year)	One- Week Projection
Base 50º F – March 1 through May 2			
Freeport	852	691	980
St. Charles	858	667	981
DeKalb	849	689	974
Monmouth	921	834	1064
Peoria	952	873	1093
Champaign	988	921	1125
Springfield	1024	1036	1176
Perry	1006	970	1159
Brownstown	1074	954	1230
Belleville	1083	1117	1245
Rend Lake	1163	1202	1318
Carbondale	1129	1141	1287
Dixon Springs	1150	1173	1307

Degrees days are accumulating rapidly with these very warm days. Japanese beetle emergence generally occurs when 1020-2130 DD have accumulated. We may start seeing Japanese beetles soon in parts of Illinois!

Kelly Estes

May 2021 Plant Clinic Sample Summary

The Plant Clinic remains open. We are currently operating with reduced staff and are only in the lab as needed for diagnostics and other lab work. We may not be able to answer or return phone calls in a timely manner; MWF are the best days to contact us due to staffing schedules. You can also email us at plantclinic@illinois.edu.

Samples shipped via USPS, UPS, and FedEx are all arriving in a timely manner. We recommend shipping early in the week (Monday-Wednesday) and keeping the tracking number so we can trace the package if needed.

Maple samples were the most submitted hosts in the May. We also received a number of spruce, and boxwood samples. Anthracnose, especially on maple and oak trees, is showing up a lot this year. This is not surprising given the cool temperatures in spring. Needle blights and needle casts are continuing to be problematic mostly on spruce, arborvitae, and pine. I have started seeing apple scab around the Champaign-Urbana area.

We've also received a number of samples and emails about arborvitae thinning or a general decline. While we often find some sort of needle blight on these samples, the overall problem often appears to be stress. Arborvitae are often used as green fences or living screens to provide privacy and protection from wind. They grow quickly and have few major pests or problems, so they should be well-suiting for this use. Unfortunately, the are often spaced much too closely together and, as they grow, they start to shade each

May 2021 Plant Clinic Sample Summary

Host	Pathogens and/or Pests Confirmed (C) or Suspected (S)
Arborvitae	Phyllosticta needle blight (C), environmental stress (S)
Basil	Pythium root rot (C)
Boxwood	Volutella blight (C), Fusarium canker (C), Boxwood leafminer (C), Boxwood psyllid (C), Boxwood spidermite (S), environmental stress (S)
Cedar	Pestalotiopsis needle blight (C), environmental stress (S)
Douglas fir	Swiss needle cast (C)
Eastern Redbud	Environmental stress (S), possible Verticillium wilt (S)
Impatiens	Pythium root rot (C)
Juniper	Juniper scale (C), Pestalotiopsis (C) needle blight (C)
Kale	Nutrient deficiency (S)
Lavender	Rhizoctonia root rot (C)
Maple	Anthracnose (C), Fungal cankers (C), Gloomy scale (S)
Oak	Oak twig canker (C), Fungal cankers (C), environmental stress (S)
Pear (ornamental)	Entomosporium leaf spot (C)
Spruce	Spruce spidermite (C), Rhizosphaera needle cast (C), Stigmina needle cast (C), Cytospora canker (S), environmental stress (S)
Strawberry	Anthracnose basal rot (C), Mycosphaerella leaf spot (C), cultural problem (S)
Tomato	Septoria leaf spot (C), Nutrient deficiency (S)
Watermelon	Rhizoctonia damping off (C)
White Pine	Phomopsis dieback (C), environmental stress (S)

other which can lead to thinning and dieback. Also, when plants are crowded there is usually reduced air flow around or through them, increasing drying time from dew or rain events and favoring the development of fungal diseases. Always remember to consider the mature size of plants when installing them and space them appropriately!

Boxwood blight continues to be a concern especially in the northern part of the state. For more information about boxwood blight, please see: http://hyg.ipm.illinois.edu/article.php?id=869 and http://hyg.ipm.illinois.edu/article.php?id=1137.

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Aphids

Aphids (Family: Aphidae) are one of the most common insect pests in the home landscape. They have small, pear-shaped bodies that can be many colors, including green, brown and yellow. Aphids can be identified by small structures called cornicles, which look like tailpipes on the rear ends of the insects. Aphids can be winged or wingless, with winged individuals appearing later in the season. Aphids can have many generations in a single year, so it is a good insect to scout for throughout the growing season.

For an in-depth discussion of the complex aphid life cycle, please refer to this August 13, 2007 Home, Yard, and Garden article.

Oleander aphid (Aphis nerii). Joseph Berger, Bugwood.org

There are many species of aphids in Illinois and they feed on a large range of host plants. Aphids suck fluids from stems and leaves while the leaves are still expanding. This can result in discoloration, leaf-curling, misshaped leaves and stem distortion.

Aphids. Phil Nixon, University of Illinois

Aphids also produce sugary droppings called honeydew. The honeydew coats the leaves giving them a shiny, sticky appearance and supports sooty mold growth. Aphids are primarily controlled to prevent honeydew, rather than their feeding injury.

Injury caused by aphids may be present before gardeners spot the aphids themselves. Inspect the undersides of leaves and the tips of twigs and new leaves to confirm that aphids are causing the injury.

One factor that can complicate aphid control is ants. Some species of ants feed on the sugary honeydew produced by the aphids. This is such an attractive food source that ants sometimes “farm” the aphids and defend them from natural enemies. If you are trying to control an aphid population that is being guarded by ants, you may need to control the ants before you can successfully control the aphids.

Biological Controls:

Aphids have many natural predators including lady beetles, hover flies, lacewings and parasitic wasps. In many cases, aphids may be present, but their populations are controlled by natural enemies and they do not cause significant injury or require treatment. Natural enemies can be encouraged in the landscape by adding flowering plants. Natural enemies can also be released in landscapes or greenhouse areas to increase predator populations and overwhelm the pests.

Cultural Controls:

Aphids may thrive on plants that have received nitrogen fertilizers. Reducing nitrogen fertilization can slow population growth and result in overall smaller populations of aphids.

Mechanical Controls:

For small populations, aphids can be wiped from plants or removed with a blast from a hose. Very localized populations can also be removed by pruning away heavily infested portions of the plant.

Control with Insecticides:

Aphids can be controlled using one of many different insecticide products. Organic options include insecticidal soaps and many oil products. They are also susceptible to many contact insecticides including pyrethroids, chlorantraniliprole (Acelepryn), acephate (Orthene, others) and abamectin (Abacide, others). They can also be controlled with systemic products like imidacloprid (Merit, others), but it is important to apply these treatments only after the plant has completed blooming to avoid exposing pollinators to the treatment.

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Black Knot

Purple-leaved plants are a great way to add color to a landscape. For plants like purple common smoketree, purple European beech, and prairifire crabapple, the purple color is most intense on the newly emerged leaves before changing to a purple-green or dark green for the summer. Schubert chokecherry does the opposite, with leaves that emerge green and turn to a rich reddish-purple for the remainder of the season. As attractive as that sounds, this plant is a fairly short-lived species that is highly susceptible to black knot.

Schubert chokecherry. Travis Cleveland, University of Illinois

Black knot is a common fungal disease that affects at least 25 Prunus species, both edible and ornamental. The disease is caused by the fungus *Apiosporina morbosa* (sny. *Dibotryon morbosum*). This pathogen infects new twigs, branches, and fruit spurs during the spring. Trunks also can become diseased. Most infections occur between bud break and two weeks after bloom when wet conditions are accompanied by temperatures of 55° to 77°F.

Early symptoms of the disease are easily overlooked, appearing in autumn as swellings of the current year's growth. Infected branches continue to swell during the following spring, eventually causing the bark to rupture, revealing corky, olive-green fungal tissue. By the fall, affected tissues are hard, brittle, rough, and darken to a characteristic coal black color. Affected branches often fail to leaf out the following spring or wilt and die by early summer. The infected branches that remain living have black knots that elongate on a perennial basis. Some knots can develop to be one foot or longer. The disease becomes more severe with each growing season. Black knot will not typically kill the tree, but causes deformed growth if left unchecked.

Black knot on Schubert chokecherry. Travis Cleveland, University of Illinois

Black Knot Management Options:

- Purchase disease-free plants. Carefully inspect the plants before purchase. Avoid plants with visible knots or abnormal swelling on branches and twigs.
- Pruning and sanitation are the primary means for reducing or eliminating black knot. During the dormant season (late winter or early spring), prune out infected branches. Make cuts 4 to 8 inches below any obvious infected tissue. Destroy (burn) or bury affected branches
- Remove and destroy any nearby unwanted Prunus species that may be harboring the pathogen. Wild plums and cherries are more susceptible to black knot than cultivated varieties. If your landscaped area is near a wooded site, look for galls on the wild Prunus species. Infected wild trees should be removed.
- Fungicide applications may be used in conjunction with cultural practices, but are often not warranted. Fungicide sprays should be applied as soon as buds open and must be continued every 2 weeks until about 3 weeks after petals fall. Chlorthalonil (Daconil), Copper hydroxide (Kocide), and Copper hydroxide + Mancozeb (Junction) are registered for use on black knot of ornamentals. Copper Octanoate (Bonide Liquid Copper Fungicide) is labeled for homeowner use. Carefully read the product label to ensure that it has been approved for the host and disease.

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Oak Leaf Blister

I have lived in my current home for several years. Every year, except for one abnormally dry spring, I've watched oak leaf blister infection develop on my black oak. I often use my tree as an example of how weather can influence disease pressure.

Oak leaf blister is a common foliar disease caused by the fungal pathogen, Taphrina caerulescens. Although all oaks are susceptible, red and black oaks are among the most affected by this foliar disease. White oaks are rarely infected.

Symptoms begin as circular, raised spots on the upper surface of the leaf, as seen in the pictures. As the symptoms continue to develop, they become more distinct and appear as scattered blister-like, puckered, or raised areas on the leaves. Symptomatic tissues are often thickened and have a light green color, which transitions to reddish-brown as the season progresses. Severely diseased leaves may drop prematurely.

Oak leaf blister on black oak, June 2021. Travis Cleveland, University of Illinois

The pathogen survives over the winter on twigs and between bud scales. Infection occurs early in the spring during cool, moist weather, as the buds start to swell and open. Expanded leaves are not susceptible. Damage to trees in Illinois is primarily aesthetic, and the disease is generally not considered to be a significant landscape problem. Management should focus on promoting oak tree vigor through pruning, watering, and fertilization. Though not usually warranted or recommended, several fungicides are labeled to control oak leaf blister. These products are only effective if applied as a dormant application to buds and twigs.

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Understanding and Preventing Off-target Movement of Herbicides

Off-target movement occurs when a pesticide moves out of the area intended for application and can cause damage to desirable vegetation, humans, and wildlife. Any pesticide can move off-target but herbicides tend to result in the most easily visible damage. In this article, we will discuss the different types off-target movement, the factors that influence each, prevention, and why this topic is more important now than ever before. When applicators are more informed and have a better understanding of these issues, they can act accordingly to better keep their applications on target.

Pesticides can move off-target by air and by water. When they move by air, we call this drift. Each year, the Illinois Department of Agriculture (IDA) receives on average approximately 120 pesticide misuse complaints, of which 60% are pesticide drift complaints. Recently, it's been higher with the change in use patterns of dicamba and 2,4-D that are being used more frequently and much earlier (and sometimes later) in the season. There are two types of drift. Particle drift is the movement of spray droplets and it's influenced by nozzle size (which determines droplet size), wind speed, and wind direction. Smaller droplets provide nice coverage on a leaf but weigh less and are carried easily by the wind. Larger droplets are heavier but may roll off the leaf. It's a balancing act for applicators. Prevent particle drift by using drift reduction nozzles that produce fewer small droplets. Operate at a lower pressure and lower your spray height so droplets have a shorter distance to travel to the target site. Do not spray in winds greater than 10 MPH. Do not spray when there is no wind as this can indicate an inversion. Check downwind for sensitive areas and use untreated buffers or return to spray later when winds are blowing away from the area. Additionally, drift reduction adjuvants can help result in larger droplets but you want to ensure you have a compatible product for your product and equipment.

Inversions are where particles can hang in the air like fog and then move once the wind picks up speed. They are complicated and fortunately are being researched. Inversions are challenging for applicators to identify but smoke that flattens out can indicate the presence of one. They are more likely to occur on clear nights with little to no cloud cover. They begin in the evening, build in intensity overnight, and generally dissipate in the morning once the temperature rises 3 degrees so we recommend applicators wait until then to spray.

Smoke that flattens out can indicate the presence of an inversion. Michelle Wiesbrook, University of Illinois.

Vapor drift is the movement of spray vapors or gasses. These can be produced up to several days after application and can travel a few miles. All pesticides are susceptible but some that can volatilize to a significant degree are these herbicides: dicamba, 2,4-D, and clomazone. A very small amount can injure very sensitive plants such as ornamentals, grapes, tomatoes, and soybeans. Vapor drift is influenced by formulation and temperature. Prevent vapor drift by avoiding applications during hot weather. Many labels will direct users to not apply when temperatures are above 85 degrees. Use less volatile formulations when possible. Ester formulations are more volatile than amine formulations. If given a choice and temperatures are warm, go with the amine. Save the esters for cooler weather. Check the label for warning statements. Keep in mind that the applicator is responsible for drift even if it's not easily seen so it's best to use practices to prevent drift.

Pesticides can also move off a treated area with water by runoff and contaminate surface water such as ponds and streams. Erosion can cause contamination if pesticides are attached to the sediments. Many factors affect this including soil and pesticide properties, vegetative cover, volume and rate of water, topography, & climate. Prevent surface water contamination by avoiding treating bare slopes, not

spraying before heavy rain, using untreated vegetation filter or buffer strips, and following surface water advisory statements on labels.

Pesticides can contaminate groundwater by run-in and leaching. Run-in occurs when pesticides move directly from the soil surface to the groundwater before they are adsorbed or degraded. Run-in can occur through abandoned wells, cracks, and sinkholes. Shallow aquifers are at greater risk because the distance to travel is short. Pesticides can also move downward through the soil with percolating water. This leaching occurs mainly in sandy, permeable soils. It's a real problem when the water table is close to the surface with shallow wells drawing from it. Leaching is influenced by several factors including pesticide properties (including solubility, adsorption, and persistence), soil properties, site conditions, and management practices including spills, improper disposal of containers and unwanted pesticides, and back siphoning while filling tanks.

Leaching is more likely to occur with sandy soils, groundwater that is close to the surface, and with lots of water moving downward through soil. Additionally, leaching is more likely with pesticides that are highly persistent, poorly adsorbed to soil, and highly water soluble. Prevent leaching by reading and following label directions and check the label for application restrictions; many include water advisory statements. Be familiar with your site conditions and choose products wisely such as those with a lower potential to move.

Of course many problems can be alleviated simply by using other control methods and saving herbicides for when they are absolutely necessary. Scouting should always be used first to determine if there is a need to use chemicals. Use the lowest labeled rate and application frequency to achieve acceptable control. However, if you are dealing with possible herbicide resistance issues, you'll need to use a higher rate per label guidance. Never exceed the labeled rate! Use spot treatments rather than broadcast applications when possible. Lastly, plan well.

Safe herbicide applications start with good planning. To prevent off-target movement or accidental injury, herbicides MUST be used properly! This can be achieved not only by carefully reading and following all label directions but also ensuring that you understand label directions. If you aren't sure how to interpret something, contact the manufacturer through their website or by calling the number on the label. Every product registered for use by EPA will have this statement on the label in the Directions for Use section, "It is a violation of Federal law to use this product in a manner inconsistent with its labeling." The label is the law. Commercial applicators are required to demonstrate learned knowledge with a competency exam to obtain licensure with the Illinois Department of Agriculture. Private land owners are required to test and obtain licensure only if purchasing or applying Restricted Use Pesticides but no license is required for General Use pesticides. General use pesticides are not likely to cause harm to the environment or to the user when used according to label directions and these can be purchased and applied by the general public. Restricted Use Pesticides will state that at the top of the front panel on the label.

When planning an application, there are several factors to consider. Buy only what you plan to use to avoid storage and unwanted product. Ensure you have equipment that works properly. Replace old worn nozzles, cracked leaky hoses or tanks. Ensure you have the appropriate personal protective equipment (PPE) per label directions, including chemical resistant gloves. At a minimum, we recommend you wear a long sleeved shirt, long pants or coveralls, a hat, shoes, socks, and unlined, chemical resistant gloves. More PPE may be required for mixing and loading. PPE must be worn to prevent exposure and pesticide poisoning.

Care should be taken to reduce impacts to non-target species. Environmental risks should be evaluated including the proximity of sensitive plants. How close are they and what are they? Is it your neighbor's vegetable garden? Consider leaving an unsprayed buffer especially if wind is blowing towards sensitive species. Windbreaks can help in certain situations. Consider the weather conditions as well as the proximity to surface water or groundwater. Labels will provide guidance but it's recommended that wind speed be between 3 and 10 mph to help direct the drops to the target but not blow them away. Be prepared to stop spraying if the wind direction shifts or the speed increases. Typically, we want good soil moisture which will aid plant growth and control but we do not want rain too soon after appli-

cation as it can be washed off. Here again, the label will provide specifics on a rain-free period. Watch your radar for rain, record your wind speed on site at spray boom height with a weather meter. The weather app on your phone is super handy but wind speed can be different from where you are compared to where it is officially recorded. Keeping good application records is just good insurance in case something goes wrong or plants nearby show strange growth afterwards.

Herbicide injury on pear. Michelle Wiesbrook, University of Illinois.

To protect water quality, there will be setback requirements provided on the label for bodies of water including wells to protect water quality. For example, a label may state: "Do not apply directly to water" or "May not be mixed, loaded, or used within 50 feet of all wells and sinkholes." For weed control in standing water, be aware that the herbicide must be labeled for aquatic areas. Consider the topography and soil texture. For soil applied products, there may be restrictions based on soil type or even as simple as the use site. Be sure that your primary weed species are listed so you have the right product for the job.

Herbicide injury to off-target plants (more specifically drift injury) is as old as herbicides themselves, but it has become a more common occurrence in recent years. Changes in use patterns of certain herbicides such as glyphosate, glufosinate, paraquat, 2,4-D, and dicamba due to herbicide resistant weeds, the development of herbicide-tolerant crops, and the switch to conservation tillage have contributed to this trend. The level of exposure to gardens and landscape plants has increased with more homes being built in rural areas where these products have been traditionally used. Additionally, bad news travels fast and social media helps accelerate the speed and awareness by prompting others to check their properties for possible damage. Across the state, there have been several reports of damage to crops (especially soybean), but also to landscape plants and most notably trees. Inconsistent temperatures and rainfall cause stress which can increase herbicide sensitivity and herbicide injury can be the breaking point for an already stressed tree. With dicamba, much has been learned over the last few years about factors that can contribute to its volatility including weather and tank-mixing partners. Further label restrictions have been added including detailed record keeping, a temperature and application date cut-off, and required certification with additional training. Applicators do not want their product to drift any more than the owner of nearby, sensitive plants wants them damaged. Off-target movement is expensive, challenging, and often emotions run high. It is best prevented in the first place. It is imperative that applicators do all they can to keep their applications on target.

For more information on preventing drift, check out the Pesticide Safety Education Program website for newsletter articles, other publications, and online trainings. Our Herbicide Tolerant Crop Stewardship online training was recently updated. This free resource was created for use by producers but is valuable to anyone interested in knowing more about drift as well as desiring to improve neighbor communications related to the issue.

Additionally, another good resource is the North Central IPM Center's "Herbicide Drift Risk Management Working Group" which has factsheets on dicamba and 2,4-D. Specialty crop growers in particular will find these of interest.

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EPA Webinar: Pesticide Labels Demystified- Pesticide Label Guidance

The Environmental Protection Agency (EPA) Center for Integrated Pest Management (IPM) is hosting a webinar called – Pesticide Labels Demystified: Guidance on how to Read Pesticide Labels. https://www.epa.gov/ipm/upcoming-integrated-pest-management-webinars . A key component of integrated pest management (IPM) is the appropriate and safe use of pesticides. Understanding how to read, interpret, and follow instructions on a pesticide label is critical to the safe use of the product. EPA hosts this free webinar to gain a better understanding of the intent of the guidance provided on these labels, which is critical to the safe use of the product. It will be held live on June 22, 2021 from 2:00 to 3:30 pm ET.

The pesticide label is a legal document that is the law. Under the Federal Insecticide Fungicide and Rodenticide Act, EPA regulates pesticides, including pesticide product labels. Labels contain information on the EPA registration number, establishment number, toxicity categories, signal words, mode of action, target pests, application directions, as well as storage and disposal. A common issue is that much of the information on the label is not understood. Join this webinar to learn how to read and interpret the information provided on pesticide labels and the meaning behind each.

It will be offered in both English and Spanish. CEUs may be available through various pest management associations.

The target audience for this webinar is the general public, homeowners, gardeners, landscapers, school facility and grounds managers, municipal building and grounds managers, park managers and crews, and pest management professionals.

To register to attend this webinar on understanding pesticide labels, visit the EPA IPM webinar website. https://register.gotowebinar.com/register/1676481867376907279

Sources

https://www.epa.gov/ipm/upcoming-integrated-pest-management-webinars

https://kentuckypestnews.wordpress.com/2021/06/01/epa-webinar-for-ceus-read-the-label-pesticide-label-guidance/

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