

HYG articles

June 15, 2020

Modified Growing Degree Days (Base 50° F, March 1 through June 14)

Station Location	Actual Total	Historical Average (11 year)	One- Week Projection	Two-Week Projection
Freeport	701	698	852	1009
St. Charles	742	657	884	1034
DeKalb	739	754	894	1054
Monmouth	861	817	1016	1176
Peoria	866	861	1026	1194
Champaign	902	890	1068	1242
Springfield	983	972	1156	1335
Perry	958	907	1116	1281
Brownstown	999	1044	1174	1356
Belleville	1150	1068	1316	1495
Rend Lake	1113	1158	1294	1483
Carbondale	1176	1096	1345	1520
Dixon Springs	1140	1164	1312	1491

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 [Illinois IPM Degree-Day Calculator](#) (a project by the Department of Crop Sciences at the University of Illinois and the Illinois Water Survey).

*(Kelly Estes)*

## Viburnum Leaf Beetles Active in Northeast Illinois

Several reports have come in detailing severe defoliation of viburnum. Upon closer inspections, homeowners found the culprit to be small larvae on the undersides of the leaves.



*Viburnum leaf beetle damage (photo courtesy of Paul Weston, Cornell University, Bugwood.org)*

The viburnum leaf beetle, a native to Europe, was brought to North America on infected viburnums. While it is established in several northeastern states, we've only confirmed this pest in a handful of counties in northeast Illinois. If your viburnum plants are showing signs of defoliation, please keep your eyes open for larvae now or Viburnum Leaf Beetle adults during the summer.

Viburnum leaf beetles overwinter as eggs on twigs of the host plant. In May, larvae hatch from the overwintered eggs and begin feeding on host plants. The larvae are greenish-yellow and develop dark spots as they age. They are usually found feeding in groups. Between early and mid-June, larvae drop to the ground and pupate. They remain in the ground for about 10 days. Adult emergence generally occurs from mid- to late July. The adult beetle is small,  $\frac{1}{4}$  to  $\frac{3}{8}$  of an inch long and is a golden brown color with sheen when in sunlight. Adults will remain active until the first frost. Development from egg to adult takes eight to ten weeks. In late summer and fall, females will begin laying eggs. They chew holes in the bark of twigs to deposit eggs and then cover them with excrement and fragments of chewed bark. A female can lay up to 500 eggs.



*Viburnum leaf beetle larvae and damage (photo courtesy of Bruce Watt, University of Maine, Bugwood.org)*



*Viburnum leaf beetle adults (photo courtesy of Paul Weston, Cornell University, Bugwood.org)*

Feeding is limited to species of viburnum. The viburnum leaf beetles have a preference for viburnums with little hair (pubescence) on the foliage, including the European cranberrybush viburnum, arrowwood viburnum, and American cranberrybush viburnum. They also feed on wayfaringtree viburnum, Rafinesque viburnum, mapleleaf viburnum, nannyberry viburnum, and Sargent viburnum. There are several resistant varieties, including Koreanspice viburnum, Burkwood viburnum, doublefile viburnum, Judd viburnum, lanatanaphyllum viburnum, and leatherleaf viburnum.

**Table 1. Preliminary list of viburnum that are relatively susceptible or relatively resistant to viburnum leaf beetles (compiled by Dr. Paul Watson, Cornell University).**

**Highly susceptible:**

- [V. dentatum](#) complex, arrowwood viburnums
- *V. nudum*, possum-haw, smooth witherod viburnum
- [V. opulus](#), European cranberrybush viburnum
- [V. opulus](#) var. *americana* (formerly *V. trilobum*), American cranberrybush viburnum
- *V. propinquum*\*, Chinese viburnum, Taiwanese viburnum
- *V. rafinesquianum*, Rafinesque viburnum

**Highly susceptible species are the first to be attacked, and are generally destroyed in the first 2-3 years following infestation.**

**Susceptible:**

- [V. acerifolium](#), mapleleaf viburnum
- [V. lantana](#), wayfaringtree viburnum
- *V. rufidulum*, rusty blackhaw, southern black-haw
- [V. sargentii](#), Sargent viburnum
- [V. wrightii](#), Wright viburnum

**Susceptible species** are eventually destroyed, but usually are not heavily fed upon until the most susceptible species are eliminated.

**Moderately susceptible**

- *V. alnifolium* (syn. [V. lantanoides](#)), hobblebush
- [V. burkwoodii](#), Burkwood viburnum
- [V. x carlcephalum](#), Carlcephalum viburnum
- [V. cassinoides](#), witherod viburnum
- [V. dilatatum](#), linden viburnum
- [V. farreri](#), fragrant viburnum (except 'Nanum', which is highly susceptible)
- [V. lantanoides](#) (syn. *V. alnifolium*), hobblebush
- [V. lentago](#), nannyberry viburnum
- [V. macrocephalum](#), Chinese Snowball Viburnum
- *V. x pragense*, pragense viburnum
- [V. prunifolium](#), blackhaw viburnum
- [V. x rhytidophylloides](#), lantanaphyllum viburnum
- *V. tinus\**, laurustinus viburnum

**Moderately susceptible species** show varying degrees of susceptibility, but usually are not destroyed by the beetle.

**Viburnum most resistant to the viburnum leaf beetle:**

- *V. bodnantense*, dawn viburnum
- [V. carlesii](#), Koreanspice viburnum
- *V. davidii\**, David viburnum
- [V. x juddii](#), Judd viburnum
- *V. plicatum*, doublefile viburnum
- [V. plicatum var. tomentosum](#), doublefile viburnum
- [V. rhytidophyllum](#), leatherleaf viburnum
- [V. setigerum](#), tea viburnum
- [V. sieboldii](#), Siebold viburnum

**Resistant species** show little or no feeding damage, and survive infestations rather well. Most species in all susceptibility groups exhibit more feeding damage when grown in the shade.

(Source: <http://www.hort.cornell.edu/vlb/suscept.html>)

The most effective means for controlling VLB is to prune infested branches in the fall. However, reducing the larval population will ultimately reduce the adult population that lays the eggs. Products containing carbaryl (Sevin) as the active ingredient or one of the pyrethroids (cyfluthrin, permethrin, resmethrin) are effective as foliar sprays.

In regards to other management options, Cornell has a very helpful management guide for homeowners (<http://www.hort.cornell.edu/vlb/manage.html>). At this time of year, for homeowners who are experiencing defoliation, the best option is going to be pesticides. It is important to make sure larvae are present and to make a thorough application so the pesticide comes in direct contact with the larvae. Spraying adults or eggs is less effective. There is some information on the use of horticultural oils and insecticidal soaps (<http://www.hort.cornell.edu/vlb/newtools.html>).

(Kelly Estes)

## Sickly Spruce

In the last issue of this newsletter, Diane Plewa noted that the U of I Plant Clinic has received numerous evergreen samples infected with needle blight and needle cast diseases. Each spring, the U of I Plant Clinic receives calls, emails, and samples regarding sick/dying spruce trees. The following are the most commonly diagnosed spruce diseases by the plant clinic:

### Rhizosphaera Needle Cast

Rhizosphaera needle cast is a fungal disease capable of infecting several conifer species. Spruce species, especially blue Colorado spruce (*Picea pungens* var *glauca*), tend to be the most susceptible, while Norway spruce has some resistance.

Most infections occur during a roughly 2-month period following bud-break. Symptoms, however, do not appear until fall, and are most evident the following spring. Diseased needles will initially be yellow, but then transition to purple or brown color before dropping from the tree (normal, healthy needles remain attached for several years). Premature defoliation results in a thin canopy and branches with tufts of new needles on the branch ends. Rhizosphaera will generally start low in the tree and advance upward through the canopy. With the aid of a hand lens or microscope, look for fungal fruiting bodies protruding from the needle pores. Fruiting bodies have smooth edges and develop in perfectly aligned rows on the needles. Be aware, the disease symptoms and fruiting bodies can easily be confused with Stigminia needle blight. Several consecutive years of severe Rhizosphaera infections cause the lower branches to die.

To manage this disease, plant less susceptible spruce and evergreen species. Promote good air circulation with adequate plant spacing, pruning lower limbs and weed management. Some formulations of chlorothalonil, mancozeb, and copper hydroxide are labeled to control Rhizosphaera and other needle cast diseases. Fungicides protect new growth from infection and may help restore moderately infected trees to good appearance. At least 2 years of fungicide applications are required. Read the labels carefully. Some chlorothalonil formulations have label restrictions that advise "DO NOT use on blue spruce." I suspect the product may cause the needles to lose their desirable blue color.



Photo 1 Black fruiting bodies of *Rhizosphaera*. Note the smooth margins.

### Stigmina Needle Blight

*Stigmina lautii* is another fungal organism that we have seen a lot of during the last several years. Unfortunately, there has not been a lot of research on this fungus, so it is not known if it is a disease pathogen or an opportunistic fungus infecting stressed plants. The symptoms and fungal fruiting bodies of *Stigmina* are similar to those listed for *Rhizosphaera* needle cast. One difference is that the fruiting bodies of *Stigmina* appear to have tendrils giving them a spider or mite-like appearance (may require a bit of imagination). If your spruce is diagnosed with this *Stigmina*, you should try to relieve any potential tree stresses. Conflicting reports have indicated limited success with fungicides for control of the *Stigmina*.



Photo 2 Black fruiting bodies of *Stigmina* needle blight. Note the fringed or tendril-like margins.

### SNEED (Sudden Needle Drop)

(SNEED) Sudden Needle Drop (also sometimes called Spruce Needle Drop) has been found on Norway, white (Black Hills) and blue Colorado spruce trees. The fungus *Setomelanomma holmii* has been found associated with symptoms of sudden needle drop, but it has not been proven that this fungus is the cause of the SNEED. Symptoms of SNEED are yellowing and eventual browning of older needles. Affected branches may be scattered through the canopy. By autumn, all of the needles on the affected branches fall off except the newest needles on the tips of the branches. Eventually the canopy of the tree thins, sometimes leaving bare branches. SNEED is nearly impossible to diagnose without the aid of a plant diagnostic lab. This is because it can only be identified by looking at the spores under a compound microscope. The fungus produces small, black, round spore-producing structures on the stems and bud scales of affected spruce. However, other harmless fungi growing on spruce trees also produce similar small black structures on spruce branches.



*Photo 3 Small black fruiting structures of SNEED on spruce branches (photo credit Diane Plewa)*

### **Cytospora (Leucostoma) Canker**

Cytospora canker is a fungal disease on stressed spruce trees. The disease is most damaging to blue Colorado spruce. The first noticeable symptom is sporadic branch dieback. Closer examination of symptomatic branches often reveals bark with small, white patches of dried sap and resin. Cankered areas may be close to the base of tree limbs. These cankered areas eventually girdle the branch and cause branch death. Unfortunately, there are no effective chemical controls for cytospora canker. Management for this disease starts with sanitation. Prune out infected branches in late winter or during periods of dry weather. Sanitation may require several years of pruning and monitoring for new canker development. Other control options focus on alleviating any tree stress and improving tree vitality. Water during drought. Apply an organic mulch under the full spread of the branches



*Photo 4* Sporadic branch die back attributed to *Cytospora* canker.



*Photo 5* Resin and dried sap on canker spruce branch.

*(Travis Cleveland)*

## Is it Spray Drift and What Do I Do?

On average, each year the Illinois Department of Agriculture (IDOA) receives approximately 120 pesticide misuse complaints, of which 60% are pesticide drift complaints. Many of you know that the number of complaints has been much higher in recent years due to the allowed use of dicamba on soybeans and the apparent extreme sensitivity of surrounding plants to small amounts of dicamba. Detailed label restrictions were quickly put into place to reduce the incidence of drift with those products. Regardless, drift complaints have been around for as long as pesticides have and certainly, dicamba is not the only one to blame. It's June and we are in the midst of the growing season for gardens, landscapes, and field crops. At this point, thousands of acres have been sprayed with herbicides and the emails concerning possible herbicide injury to non-target plants have started to come in.

With the physical off-target movement of pesticides, prevention is key. Applicators should take steps to prevent physical drift and most do. No applicator wants their pesticide to move away from the intended location. Neighborly discussions before pesticides are applied are important so applicators understand if sensitive plants are growing near the application site. In the unfortunate case that drift has occurred, it's a good idea to know the basics of the complaint process and what resources are available to you.

Before doing anything, both parties should make an effort to discuss the suspected drift incident and rule out other possible causes of the damage. In cases where the cause of the damage remains unclear or where the parties will not work together, a formal complaint may be necessary.

The IDOA and University of Illinois Extension have important but different roles in assisting citizens of Illinois in dealing with pesticides. These roles are based on the IDOA's responsibilities to administer and enforce the laws related to the use of pesticides and University of Illinois Extension's responsibilities to educate and solve problems.

“The University of Illinois Plant Clinic does not perform pesticide residue testing. Plant Clinic staff will examine plants to identify pests and pathogens present on the sample which could be causing the symptoms. This allows clients to rule out other possible causes for the injury. Staff and specialists can also note if the symptoms on the sample are consistent with the applied chemicals listed on the sample submission form. Due to COVID-19, the Plant Clinic operations have changed a bit and staff may be limited. Please contact the Plant Clinic at [plantclinic@illinois.edu](mailto:plantclinic@illinois.edu) with questions about sample submission and shipping.”

The IDOA has three roles that impact its handling of pesticide-drift complaints. These roles are (1) education and licensing of applicators and operators via the Pesticide Safety Education Program, (2) investigation of complaints, and (3) enforcement of pesticide laws. The roles of IDOA are determined by laws and statutes passed by the Illinois legislature or the federal government.

If you choose to file a complaint with IDOA, time is of the essence. The pesticide drift complaint process is started by filling out a pesticide misuse/incident complaint form which can be found at <https://www2.illinois.gov/sites/agr/Pesticides/Documents/PesticideMisuseComplaintForm.pdf> or by calling IDOA's Bureau of Environmental Programs at 1-800-641-3934 (voice and TDD) or 217-785-2427. Due to limited staffing from COVID-19, you may need to leave a detailed phone message. Additional information on pesticide uses and misuses can be found on the agency's website at <https://www2.illinois.gov/sites/agr/Pesticides/Pages/Pesticides-Uses-Misuses.aspx>.

Complaint forms must be received by IDOA within 30 days of the incident or within 30 days of when the damage was first noticed. Complaints filed after that will be kept on record, but no administrative action can be taken.

## The complaint process

Once a complaint is filed with the department, a field inspector is assigned the case. In most cases, the inspector will interview the complainant and inspect the site. Various types of samples, such as plants, water, or soil, may be collected for analysis at IDOA's in-house laboratory.

Due to COVID concerns this season, field inspector contact with complainants and applicators will mostly be limited to phone conversations unless proper social distancing guidelines can be maintained.

The inspector may also interview applicators in the area, examine pesticide records and collect weather data in an attempt to determine the nature and cause of the damage. The field investigator will then submit a report to the Department for review.

Both parties will receive written notification if the Department finds a violation and takes an enforcement action. Penalties range from advisory or warning letters to monetary penalties of \$750 to \$10,000, depending on the type and severity of the violation. Penalties are determined through a point system defined in the Illinois Pesticide Act.

Even if a violation of the Illinois Pesticide Act cannot be substantiated, both the complainant and the alleged violator will be notified in writing of the complaint's status. Remember, the Department's role in pesticide misuse incidents is limited to determining whether a violation has occurred. IDA cannot help complainants recover damages.

Certainly, it is easiest and best to prevent physical herbicide drift from occurring. Drift can be extremely expensive and often results in poor neighbor relations.

### Additional information for use when handling potential drift injury

A useful resource that includes information and helpful tips on preventing and dealing with the off-target movement of herbicide applications is an online module titled, "Herbicide Tolerant Crop Stewardship". Especially useful would be chapter 5, "Avoiding/Handling Injury." While it was created with producers in mind, it would also be beneficial to homeowners, gardeners, and really anyone who grows plants. This free resource can be found at: <http://web.extension.illinois.edu/psep/articulate/htcs/>.

Another useful resource is the booklet, *Field Guide to Herbicide Injury on Landscape Plants* available for sale at <https://pubsplus.illinois.edu/product/field-guide-to-herbicide-injury-on-landscape-plants>. This guide can assist with the challenging task of diagnosing herbicide injury. It features photographs of specific injury symptoms that resulted from a field trial of various ornamental and vegetable species.

*(Michelle Wiesbrook and Aaron Hager, updated from a 2016 article by the same authors.)*

## A Homeowners Guide to Troubleshooting a Misapplication of Pesticides

A pesticide misapplication can happen to even the best of us. In a recent email, a homeowner shared the following.

"I was doing a lot of planting over the weekend and I accidentally used Bayer Advanced 701260 All-In-One Rose and Flower Care Concentrate (not for edible plants) on my newly planted raspberry bush. What should I do? I gave it a ton of water to try to dilute it after I gave it the poison. I don't want to poison my family"

In this article, we will walk through the steps to determine if the raspberries will be able to be eaten this year.

One of the first things we do is to look up the product label. We can find the label online but the most accurate one is on the bottle. This is where we can see what the active ingredients are as well as where the product can be applied and at what rate. The active ingredients in this product are tebuconazole (a fungicide) and imidicloprid (a neonicotinoid insecticide).

From the label we can read that "The entire plant, even new growth, is fed and protected against insects and disease. Rain or watering cannot wash off this long-lasting systemic protection." We can also see that the product is not labeled for use on food crops and is for ornamental use only.

We can then look up the safety data sheet (SDS). The SDS contains information on potential hazards and how to work safely with the product. The SDS for this pesticide has an EPA Registration Number of 72155-21. Though the label and SDS provide directions and safety information, they won't provide information for uses not listed on the label. That brings us to our final step, which is calling the National Pesticide Information Center (NPIC) <http://npic.orst.edu/> to get guidance from their trained toxicologists. NPIC is a warehouse of great information for pesticide use. They operate on limited call-in

hours. You can also contact them via email. This is one of the best ways to direct anyone that needs specific product information or pesticide safety questions.

Posing this specific concern with NPIC, here is their response and guidance on this situation.

*If her concern is primarily with the risk of consuming fruit when the plant fruits, then unfortunately the risk is unknown because it has not been evaluated on raspberries. The risk depends on how much the plant was exposed to and how the chemicals behave, and their toxicity. The active ingredients in the product are tebuconazole (a fungicide) and imidacloprid (a neonicotinoid pesticide). Both are systemic. Imidacloprid is used on certain food crops and very small amounts (residue) is permitted in certain food crops, including cane berries, although again this specific product does not appear to be labelled for food. Tebuconazole also is used on some food crops. The signal word caution means the total toxicity of the formulated product is low.*

**Imidacloprid Technical Fact Sheet**

<http://npic.orst.edu/factsheets/archive/imidacloprid.html>

**Signal words**

<http://npic.orst.edu/factsheets/signalwords.html>

Unfortunately, many times the answers are uncertain; many products do not have legal tolerance levels set for the active ingredients when applied to an off-label crop (in this case, raspberries). The homeowner has two options. Since it is still early in the growing season, they could remove the plant and start over again. The other option would be to remove and discard any fruit from this season focusing on the plant's vegetative growth and health until next season. In this situation, we know the product has a low toxicity, and the amount applied was likely very low, but it ultimately comes down to the perceived risk. We do not know what specific inert ingredients are included in this particular formulation. They could differ from those similar products that are registered for food use. We cannot recommend that you consume the fruit in this situation. Isn't your health and safety more important than a few raspberries or even a few dollars spent replacing a plant?

*(Maria Turner)*