

# Plant Health Care Report

Scouting Report of The Morton Arboretum



THE  
CHAMPION  
of TREES

April 1, 2022

Issue 2022.1

Welcome to the first issue of the Plant Health Care Report (PHCR) for 2022. My name is Sharon Yiesla. I am on staff at The Morton Arboretum Plant Clinic, and I will be responsible for compiling the newsletter again this year. For comments regarding PHCR, or to subscribe to email alerts regarding posting of new issues, contact me at [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org).

Our report includes up-to-date disease and insect pest reports for northeastern Illinois. This year we resume our on-grounds scouting program. Plant Clinic staff and volunteers are back working on-site this year. Contact us via email at [plantclinic@mortonarb.org](mailto:plantclinic@mortonarb.org) or by phone at 630-719-2424 (Monday thru Friday, 10 am to 4pm). The Plant Clinic is also open to walk-ins, but a [timed entry](#) for the Arboretum is required and non-members need to pay the entry fee.

**Some old and some new:** We are continuing last year's format: full issues alternating with growing degree day (GDD) issues; focus on more serious pests; alerts issued for new major pests. We are also retaining the features that were implemented last year: Extending the season with 2 full issues in September (no GDD issues); an index that gets updated with each new full issue; a list of insects that might be emerging at the growing degree day range occurring when each full issue is published; comparisons of current growing degree days (GDD) with the same date in past years; a report on rainfall to look not only at the total for the year, but also the distribution of rain from month to month; and soil temperatures across the state.

## Quick View

**What indicator plant is in bloom at the Arboretum? (see article about indicator plants on page 6).**

Cornelian-cherry dogwood (*Cornus mas*) is in early flower (Figure 1). It can serve as an indicator plant for a variety of pests. In early flower (0-30 GDD) it can indicate the time when pine bark aphid is becoming active. In later flowering (50-100 GDD), it can indicate Cooley and Eastern spruce gall adelgid activity.

**Accumulated Growing Degree Days (Base 50): 20.5 (as of March 31)**

## Miscellaneous

- Winter weather
- Using growing degree days
- What do indicator plants tell us?
- Timing use of fungicides
- Crabgrass preventer
- Weather, climate and water

## Insects/other pests

- Cicadas
- Egg masses and more
- Magnolia scale



Figure 1 *Cornus mas* in flower

## Oak and Elm Pruning Advisory

Just a reminder - **stop pruning oaks and elms by April 15**. Sap and bark beetles, the insects that spread the pathogens that cause oak wilt and Dutch elm disease, will soon be active. The beetles are attracted to pruning wounds. Pathologists differ in their opinions on when to resume pruning. To err on the side of safety don't prune oaks and elms between April 15 and October 15, when the beetles are active. If you must prune close to or after that deadline, seal the pruning cuts immediately. Wisconsin DNR offers this guideline about the emergence of the vectors: As a rule of thumb, "temperatures above 60 degrees for 7 consecutive days" is considered to be warm enough for the emergence of *C[olopterus] truncates* [sap beetles]. These are the beetles that can carry the oak wilt fungus.

### Soil temperatures around Illinois (from Illinois State Water Survey)

This information will be provided all season. For data from other reporting stations, go to <https://www.isws.illinois.edu/warm/soil/> (you will need to set up an account to access data.) Crabgrass does not germinate until soil temps are above 55 degrees for 5 to 7 days (use more shallow depth for this). Root growth on trees/shrubs occurs when soil temps are above 45 degrees (use deeper depth).

Max. Soil temps For 3/31/2022*	St. Charles reporting station (north)	Champaign reporting station (central)	Carbondale reporting station (south)
2-inch, bare soil	47.1	50.6	54.5
4-inch, bare soil	48.3	47.6	54.9
4-inch, under sod	46.1	49.5	57.2
8-inch, under sod	43.7	48.1	53.5

\* This is the maximum soil temperature recorded the day prior to publication of PHCR.

### Seasonal precipitation

Seasonal precipitation (rain and melted snow) in inches.			
	2022	2021	Historical average (1937-2021)
Jan	1	1.5	1.946
Feb	2.61	1.49	1.765
Mar	3.88	1.24	2.520
April			
May			
June			
July			
Aug			
Sept			
Year to date	7.49	4.23	6.231

## Degree Days (current and compared to past years) and rainfall

As of March 31, we have 20.5 base-50 growing degree days (GDD) at The Morton Arboretum. The historical average (1937-2021) for this date is zero GDD<sub>50</sub>. The table below shows a comparison of GDD in different years. We are comparing the GDD reported in this issue with the GDD reported in the first issue of 2020, 2015 and 2014. These years were selected since publication dates of the first issue were within a day or two of each other. Glencoe, Lisle and Waukegan (60085) were not used in 2015 and 2014, so there is 'no report' from those stations.

Location	GDD as of 2022 1 <sup>st</sup> issue 4/1/22	GDD as of 2021 1 <sup>st</sup> issue 4/2/21	GDD as of 2015 1 <sup>st</sup> issue 4/3/15	GDD as of 2014 1 <sup>st</sup> issue 4/4/14
Carbondale, IL*	104	121	86	72
Champaign, IL*	44	50	40	6
Chicago Botanic Garden**	20 (as of 3/29)	48 (as of 3/31)	.5 (as of 4/1)	No report
Glencoe*	2	9	No report	No report
Chicago O'Hare*	28	52	31	5
Kankakee, IL*	27	39	25	3
Lisle, IL*	31	52	No report	No report
The Morton Arboretum	20.5	23.5	9.5	0
Quincy, IL*	69	72	64	21
Rockford, IL*	9	17	20	3
Springfield, IL*	61	63	54	19
Waukegan, IL* (60087)	15	34	19	1
Waukegan, IL (60085)	19	45	No report	No report

\*\*Thank you to Chris Henning, Chicago Botanic Garden, for supplying us with this information.

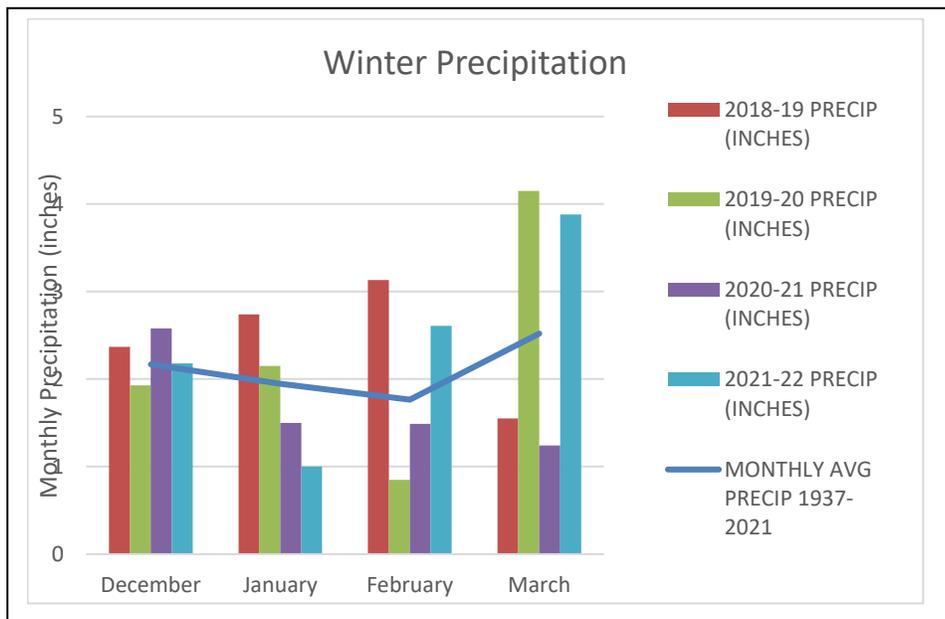
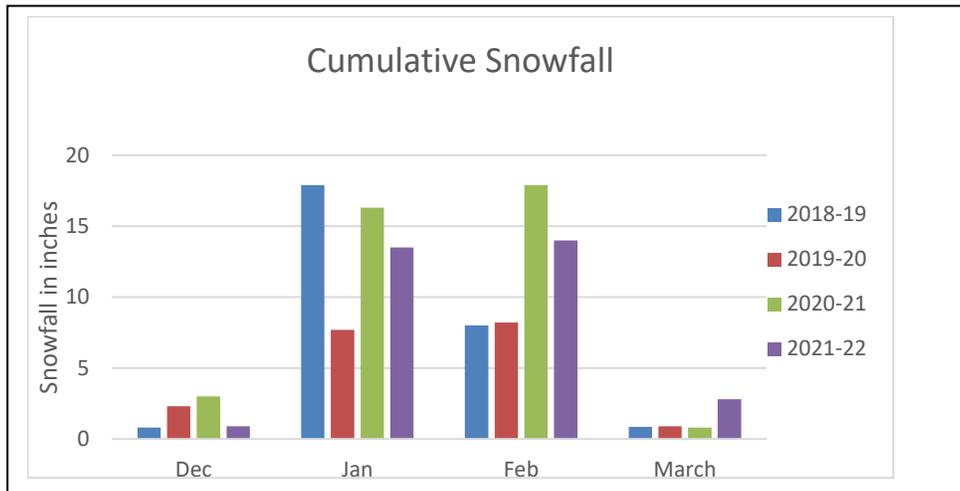
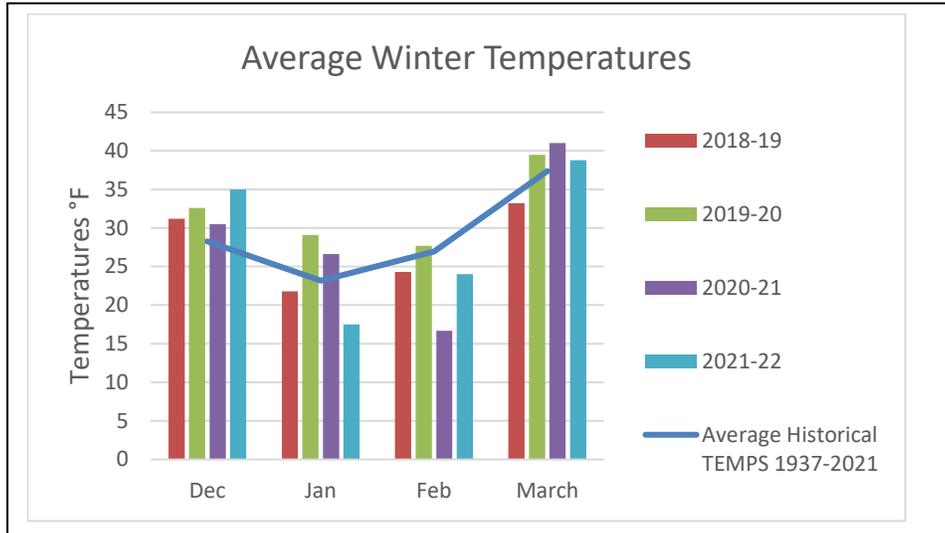
\*We obtain most of our degree day information from the GDD Tracker from Michigan State University web site. For additional locations and daily degree days, go to <https://gddtracker.msu.edu/>

### How serious is it?

Problems that can definitely compromise the health of the plant will be marked "serious". Problems that have the potential to be serious and which may warrant chemical control measures will be marked "potentially serious". Problems that are seldom serious enough for pesticide treatment will be marked "minor". "Aggressive" will be used for weeds that spread quickly and become a problem and "dangerous" for weeds that might pose a risk to humans.

**Miscellaneous:**

**Winter weather:** The charts show 2021-22 winter weather and compares it to previous years.



## Using growing degree days

In every issue of the Plant Health Care Report, we list growing degree days (GDD) accumulated at The Morton Arboretum and other sites throughout Illinois. This article will explain what they are and how we can use them.

The development of plants, insects and fungi is dependent on heat. Development speeds up as the temperature increases and slows as temperature decreases. Many plants and insects have been studied in regard to this relationship between heat and development. We can anticipate the flowering of a shrub or the emergence of an insect based on how many growing degree days (units of heat, not actual days) have accumulated. We can give this information to our scouts and ask them to look for specific problems based on GDD. This helps to refine the process of scouting. Making those GDDs available to our readers helps them plan for pests and diseases.

Accumulation of GDD can vary quite a bit from year to year, and by tracking that information we can be more accurate than if we just look at the calendar. Here is an example: Eastern tent caterpillars begin to hatch out of their eggs when GDD base 50 is between 100 and 200. In 2014 we had accumulated 100 GDD by May 9. We often do expect to see this pest in early May, so 2014 was fairly 'average'. In 2012, we had accumulated 100 GDD by March 19 (nearly two months earlier than 'normal'). If we had gone with the calendar method and waited to deal with this pest in May, we would have missed it completely.

GDDs days are fairly easy to calculate. We use GDD base 50. Add the maximum temperature to the minimum temperature for a day, divide by two, and subtract 50 (the base number). If the number resulting from this calculation is above zero, then that is the number of degree days for that day. If the result is zero or below, then the number of GDD is zero for that day. These growing degree days (again, think of them as units of heat if the word "day" confuses you) are cumulative. When we have accumulated 100 GDD, we expect certain insects to begin emerging (and certain plants to be in flower). When we get to 500 GDD there will be different insects emerging and different plants flowering. We use base 50 because 50 degrees F is the temperature at which most plants and pests begin to grow.

Various sources link insect emergence with certain stages in the life of indicator plants. This is possible because plants also respond to heat. A couple of resources include Don Orton's book Coincide and the following websites:

[http://www.ipm.msu.edu/agriculture/christmas\\_trees/gdd\\_of\\_landscape\\_insects](http://www.ipm.msu.edu/agriculture/christmas_trees/gdd_of_landscape_insects)

[http://extension.unh.edu/resources/files/Resource000986\\_Rep2328.pdf](http://extension.unh.edu/resources/files/Resource000986_Rep2328.pdf)

<http://www.ipmofnh.com/wp-content/uploads/2015/02/Insect-Growing-Degree-Days.pdf>

### **What do indicator plants tell us?**

We always give an indicator plant in each issue of the PHCR. These plants tie in with our use of growing degree days (explained above). The development of both insects and plants is influenced by the accumulation of heat units, or growing degree days (GDD). At a certain accumulation of GDD we can expect certain insects to be present at a certain stage of their life cycle. At that same level of GDD, a particular plant will be in flower. Here is an example: Between 100 and 200 GDD (base 50), we can expect to see Eastern tent caterpillars emerging from their eggs. At that same number of GDD we will also see redbud (*Cercis canadensis*) beginning to flower. The redbud can be used as an indicator plant. Its early flowering stage indicates that we have had enough GDD to cause the Eastern tent caterpillars to hatch out. Now we know when to look for them. The redbud, and other indicator plants, are good visual cues for GDD that are easy to spot in the landscape.

### **Timing use of fungicides**

By the time we write an article on a disease for the Plant Health Care Report, the time to treat has often passed. In the interest of being proactive, let's talk about fungicide applications. Many fungicides are applied as protectants to keep fungi from penetrating into plant tissue. Often this application process needs to start at the time new foliage is emerging and may require 2 to 3 applications as the leaves continue to emerge. The weather, as usual, has been very up and down. We had a couple of promising warm days and then back to cooler temperatures; cool enough to keep leaf buds closed for the most part. But a few days of warm weather could bring about a quick change. The weather for the next week or so will be on the cooler side, but that can turn around quickly. Watch the weather and be ready to start fungicide applications.

### **Crabgrass preventer**

If you've been in the hardware stores lately, you might have noticed bags of crabgrass preventer (perhaps as early as February or March). Does that mean it is time to put them down? Not necessarily. March offered us some up and down temperatures, as well as some nice days, but the time was not right. Now, April is here and we should start planning. We do want to get the crabgrass preventer down before the germination starts, but many of these preventers only last about 60 days, so if you apply in February or March you may not get the most use from it. Crabgrass seed will not germinate until SOIL temperatures are greater than 55 degrees F for 5-7 consecutive days. We are close to that in northern Illinois (soil temps at the reporting station in St. Charles came close to 50 degrees for a couple of days, recently, then dropped back down into the 30's). In an 'average' year we might be applying crabgrass preventer in mid-April (hopefully a couple of weeks before germination). This year, with the below normal air temperatures, we have been having, we might be delayed slightly. We'll update the crabgrass issue next week. Iowa State gives this guideline: "Crabgrass seed

germination usually begins ... when redbud trees reach full bloom”, and that is often late April into mid-May. Do NOT use forsythia as an indicator plant. Forsythia is not reliable as it tends to flower whenever it feels like it. Depending on the weather, it can start to flower any time between December and April.

One last thought on crabgrass. We often get reports in early spring of green clumps of crabgrass established in the lawn. Crabgrass is an annual, so it died with the frost last fall. If you see green clumps in your lawn right now, it is most likely tall fescue.

## **Weather, Climate and Water**

The old saying goes that if you don't like the weather in the Midwest, wait 10 minutes and it will change. Does it seem more like 5 minutes these days? The environment has become one of the biggest challenges for horticulture. We have always had up and down temperatures in spring and fall, but now we are seeing more extremes and often for a good part of both spring and fall. In the last 10 years, we have had several severely wet springs that lead to root damage. These were often followed by droughty summers. Drought after flooding does not even out the situation. Instead, it potentially adds damage on top of damage.

Environmental problems do not stand alone. The stress they cause, leads plants to be more open to attack by diseases and insects. Sometimes we treat for the disease or insect, but forget that we need to try to alleviate the stress that invited them in. For more about this, see our [last issue](#) of 2021. We also have to realize that the stress under which our trees and other plants live is not due to weather (what is happening today), but rather to climate (what is happening over the long term). Stress builds up over time and we are seeing a lot of trees and shrubs struggling due to ten or more years of an ever-changing climate.

We really need to keep all this change in mind, for several reasons:

- Climate does affect the health of our plants. As noted above, a tree may be struggling today, because of what has occurred in the environment for the last several years, rather than something that happened this week.
- We can't rely on the calendar entirely for scheduling garden activities. We need to look at the stage of development of our plants, as well as the current and upcoming weather.
- With the number of dry summers we have had recently, we are always talking about watering to keep our trees and other plants healthy. That is important, but so is our water supply. Water is a precious commodity and we need to use it wisely.

With all the rainy days we have had in the last couple of weeks, it seems odd to talk about being conservative with our water, but we need to. Rain does not always come when we want

it to, or in the quantity we need. If you look at last year’s rainfall, we ended just about four and a half inches below average. That sounds pretty good. When you look at when that rain fell, it paints a different picture. As of the end of September last year, we were NINE inches below average! October gave us eight and a half inches that got us close to average. But for a large portion of the growing season we had a deficit. In addition to that, there is a good chance that a lot of that rainfall in October ran off into storm drains rather than soaking into the parched ground in our landscapes. It is likely that our landscapes did not get the full benefit of that rainfall.

We want to water, but we want to do so efficiently. As we go through this year, the Plant Health Care Report will include articles on watering in general, as well as specific watering devices and how to use them effectively. Our conversation about climate, weather and water will be an ongoing one.

### **Pest Updates: Insects**

Examples of insects that may emerge soon in northern Illinois (based on growing degree days)			
GDD (base 50)	insect	Life stage present at this GDD	Type of damage
20-90	Magnolia scale	Overwintering nymphs become active	Feeding on sap
100 (possibly less)	Viburnum leaf beetle	Larvae (may be feeding when leaves are half expanded)	Chewing leaves
100-200	Eastern tent caterpillar	Caterpillars	Chewing leaves
100-200	Pine sawfly	larvae	Chewing needles
100-450	Spongy moth (formerly gypsy moth)	caterpillars	Chewing leaves

### **Cicadas**

No, they are not coming yet! The periodical (17 year) cicadas are not due to emerge in the Chicago region until 2024. However, there are often some early emergers. We could see some early emergers in 2022 or 2023, but there is no way to predict what areas may see them or how many will emerge.

I am writing about cicadas because we are getting questions about planting new trees and shrubs. There is concern that planting of new trees and shrubs should be postponed until after the cicadas have come and gone. They will be here in early summer of 2024. That is a long time to wait to plant! We are not recommending that you wait.

Over the last few years, the region has lost a lot of trees. The emerald ash borer has killed millions of ash trees, in both landscapes and natural areas. Several areas have been hit by

tornadoes and strong storms and have lost trees. We are seeing decline in trees across the region due to environmental stress. For more mature trees, their age works against them in this situation. We need to be thinking about planting trees, now, more than ever. The Morton Arboretum is committed to [planting over 1000 trees](#) this year to celebrate our centennial. Trees provide an amazing number of [benefits](#).

It is true that cicadas can do some damage to smaller trees and shrubs by cutting into their stems to lay eggs. The population of cicadas that emerge in 2024 will vary by location. Places that have experienced a lot of new construction in the last 17 years may see much smaller populations. Construction digs up the soil and can destroy many of the cicadas waiting underground.

Once the cicadas emerge in 2024, they are only present for about 6 weeks. We can protect small trees and shrubs from their damage by wrapping them in fine netting for that time period. Last time around, many people wrapped their small trees and shrubs in tulle (yes, tulle, as in a ballerina's tutu). So, think about having some netting on hand to protect young trees and shrubs. More mature trees can tolerate some cicada damage. If you are thinking about planting new trees, go ahead and do it (and have some netting on hand).

### Egg masses and more

We may still have some time to look for insects in their overwintering stage. The best time to look for egg masses like those of Eastern tent caterpillar, spongy moth (formerly gypsy moth), viburnum leaf beetle and bagworm is before the season gets going. Look for egg masses now and destroy them to reduce the population for the coming season.



Figure 2 Spongy moth egg mass

Eastern tent caterpillar egg masses are dark gray to black and are wrapped around twigs that are about the diameter of a pencil. Prune out branches with egg masses attached. Spongy moth egg masses (fig. 2) are buff colored, covered with hairs, and about 1 1/2 inches long. Each female usually lays one egg mass, which could contain as many as 1,000 eggs. Egg masses can be carefully scraped off bark and destroyed before they hatch. Viburnum leaf beetle eggs are laid in the tips of twigs and covered with caps of chewed wood (fig. 3). Clip off the ends of twigs that show the egg



Figure 3 Egg-laying sites of viburnum leaf beetle

laying sites. Bagworm eggs spend the winter in the bag that was made by the caterpillar last season. The bags are made from leaves of the host plant (fig. 4) and can be found hanging from branches. Pull the bags off the host plant. Any egg masses that you remove should be destroyed. Don't just drop them on the ground by the host plant.



Figure 4 Bagworm bag containing eggs

Since we will soon be working on spring clean-up in the garden, this would be a good time to look at groundcover euonymus. If yours is infested with scale insects, prune out heavy infestations now. Reducing the population now will make insecticides more effective when it is time to treat in summer.

### Magnolia scale (potentially serious)

Populations of magnolia scale (*Neolecanium cornuparvum*) have been high for the last few years. These insects have sucking mouthparts and extract sap from the host plant's branches and twigs. Badly infested trees are weakened and growth is slowed. When infestations are severe, branch dieback can result, and with repeated severe attacks, trees may decline drastically.



Figure 5 Magnolia scale crawlers (arrows)

Late last summer into fall, adult females gave birth to live young, called crawlers. The crawlers (fig. 5, see arrows) are tiny, flattened, and vary in color from yellow to reddish-brown. The crawlers settled down on one- to two-year-old twigs to feed and remained there through the winter. They are still there and will soon be (or maybe already are) active again (in terms of moving around and feeding).

**Management:** Check twigs for signs of the tiny crawlers. If they are moving around, they are alive. If they seem dry and fall off easily when you rub them, they are dead. Dead crawlers, means you won't need to treat this spring. It should be noted that adult scales are

dead (from old age), but will remain in place even when dead. Dead adults will be dry and easy to pick off.

If you find live crawlers, you can treat the crawlers before leaves emerge with a dormant oil. Check the label for any temperature restrictions to prevent damage to the plant. Avoid spraying dormant oil when new emerging tissue is present. Note that some oils are sold as “horticultural oil” or “multi-season oil” rather than dormant oil. These are all basically the same oil, but with two rates or sets of mixing instructions: one for use as a dormant oil and one for use as a summer oil (when foliage is present). Select the right set of mixing instructions for the situation. Insecticidal soaps are also effective against the crawler stage. The oils and the soap must be sprayed directly on the crawlers.

Good web site: <https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/magnolia-scale-neolecanium-cornuparvum/>



***Bartlett Tree Experts, Presenting Sponsor of the Plant Clinic.***

The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Knowledge Specialist and edited by Stephanie Adams, Ph.D., Plant Health Care Leader; Fredric Miller, Ph.D., Research Entomologist at The Morton Arboretum and Professor at Joliet Junior College; Julie Janoski, Plant Clinic Manager; and Carol Belshaw, Arboretum Volunteer. The information presented is believed to be accurate, but the authors provide no guarantee and will not be held liable for consequences of actions taken based on the information.

Thank you...I would like to thank all the staff and volunteers that report disease and pest problems when they find them. Your hard work is appreciated.

Literature/website recommendations:

Indicator plants are chosen because of work done by Donald A. Orton, which is published in the book Coincide, The Orton System of Pest and Disease Management.

Additional information on growing degree days can be found at:

[http://www.ipm.msu.edu/agriculture/christmas\\_trees/gdd\\_of\\_landscape\\_insects](http://www.ipm.msu.edu/agriculture/christmas_trees/gdd_of_landscape_insects)  
[http://extension.unh.edu/resources/files/Resource000986\\_Rep2328.pdf](http://extension.unh.edu/resources/files/Resource000986_Rep2328.pdf)

This report is available as a PDF at The Morton Arboretum website at <https://mortonarb.org/about-arboretum/plant-health-care-report/>

For pest and disease questions, please contact the Plant Clinic. You can contact the Plant Clinic via email at [plantclinic@mortonarb.org](mailto:plantclinic@mortonarb.org) . Emails will be answered during business hours Monday through Friday. You can call the Plant Clinic by phone (630-719-2424) or visit in person, Monday thru Friday 10 am to 4 pm. Arboretum members need [a timed entry ticket](#) is needed to enter the Arboretum and visit Plant Clinic in person. Non-members need [a timed ticket](#) and must pay the entry fee.

Inquiries or comments about the PHCR should be directed to Sharon Yiesla at [syiesla@mortonarb.org](mailto:syiesla@mortonarb.org) .

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## 2022 Plant Health Care Report Index



Following is an index of the various subjects in this year’s report. The number after each subject is the report number. For example, using the chart below, Cicadas..... 1 means that it was discussed in the PHCR 2022.01 or the newsletter dated April 1, 2022. The index is updated with the publication of each full issue and is included at the end of each full issue.

2022.1	April 1	2022.8	July 8
2022.2	April 15	2022.9	July 22
2022.3	April 29	2022.10	August 5
2022.4	May 13	2022.11	August 19
2022.5	May 27	2022.12	September 9
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