Plant Health Care Report

The Morton Arboretum

Scouting Report of The Morton Arboretum

April 5, 2013 **Issue 2013.1**

Welcome to the first issue of the Plant Health Care Report (PHCR) for 2013. My name is Sharon Yiesla. I am on staff at The Morton Arboretum Plant Clinic and I will be responsible for compiling the newsletter this year. If you have any comments or concerns regarding the Plant Health Care Report, please send them to me at syiesla@mortonarb.org.

Our report includes up-to-date disease and insect pest reports, as well as color images, for northeastern Illinois. You'll also find a table of accumulated growing degree days throughout Illinois, precipitation, and plant phenology indicators to help predict pest emergence. The report is published bi-weekly on Fridays in April and August, and weekly May-July.

Arboretum staff and volunteers will be scouting for insects and diseases throughout the season. We will also be including information about other pest and disease problems based on samples brought into The Arboretum's Plant Clinic from homeowners and professionals.

Quick View

What indicator plant is in bloom at the Arboretum?
Diane Hybrid Witchhazel (*Hamamelis x intermedia* 'Diane') (Figure 1)

Accumulated Growing Degree Days (Base 50): 0 (as of April 4)
Accumulated Growing Degree Days (Base 30): 192 (as of April 4)

Miscellaneous

- What are degree days and why do we care about them anyway?
- Winter weather
- What about the drought?
- Salt damage

Animal pests:

- Voles

Figure 1 'Diane' Hybrid Witchhazel

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 the diseases oak wilt and Dutch elm disease, will soon be active. Elm bark beetles have been caught in pheromone traps at 150-200 growing degree days base 50. 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.

Degree Days and Weather Information

As of April 4, we are at zero base-50 growing degree days (GDD), which is 225 GDD_{50} behind 2012 at this time (recall that 2012 was an unusual year, with very warm temperatures early in the season). The historical average (1937-2012) for this date however, is also zero GDD_{50}. Since January 1, we have had 8.03 inches of precipitation (compared to historical average of 6.6").

Location	B_{50} Growing Degree Days Through April 4, 2013	Precipitation (in) January 1-April 4, 2013
Carbondale, IL*	25	
Champaign, IL*	7	
Chicago Botanic Garden**	0	
Chicago O'Hare*	0	
Kankakee, IL*	2	
The Morton Arboretum	0	8.03"
Northbrook, IL**	2.5 (as of 4/3)	0.00" (3/27-4/2)
Quincy, IL*	4	
Rockford, IL*	0	
Springfield, IL*	7	
Waukegan, IL*	0	

**Thank you to Mike Brouillard, Northbrook Park District and Mike Annes, 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 http://www.gddtracker.net/

What are degree days and why do we care about them anyway?

By Donna Danielson, M.S.

We list the growing degree days we've accumulated at The Arboretum, The Chicago Botanic Garden, and other sites around the state near the beginning of each report. Just what are degree days and why do we care about them?

Accumulated degree days are very important tools used for scouting insect pests. Many living organisms, including plants, insects, and fungi, are dependent on heat energy from their environment to develop. They develop faster as temperatures increase and slower as temperatures decrease. You know from your own experience that plants bloom earlier when we have warm springs compared to cool springs. Insects and many diseases develop earlier when the weather is warmer, too. In fact, many plants and pests have evolved together. So, a tool for measuring this environmental heat can be helpful

for determining when to scout for pests. That's why we use accumulated degree days to determine the appearance and growth of insect pests.

Insects don't have calendars, although they probably would like the Far Side calendars created by Gary Larson. Pest outbreaks can be predicted with much more accuracy using growing degree days than the calendar. For example, here at The Morton Arboretum in 1997, we found European pine sawfly larvae hatching around May 12. In 1998 we discovered them hatching on April 16, nearly four weeks earlier. Why? Spring 1997, was much cooler than spring 1998. On May 12, 1997 we were at 159.5 degree days base 50, whereas on April 16, 1998, we were at 165 degree days base 50. Essentially, insects don't care what day or month it is. [Editor's note: In 2012, when the spring temperatures were really accelerated, we were at 162 degree days base 50 on March 22! Spring of 2012 saw early emergence for many insects.]

There is much less data on predicting the appearance of diseases based on degree days than on the appearance of insect pests, but we intend to collect this information and, over time, identify links between diseases and degree days.

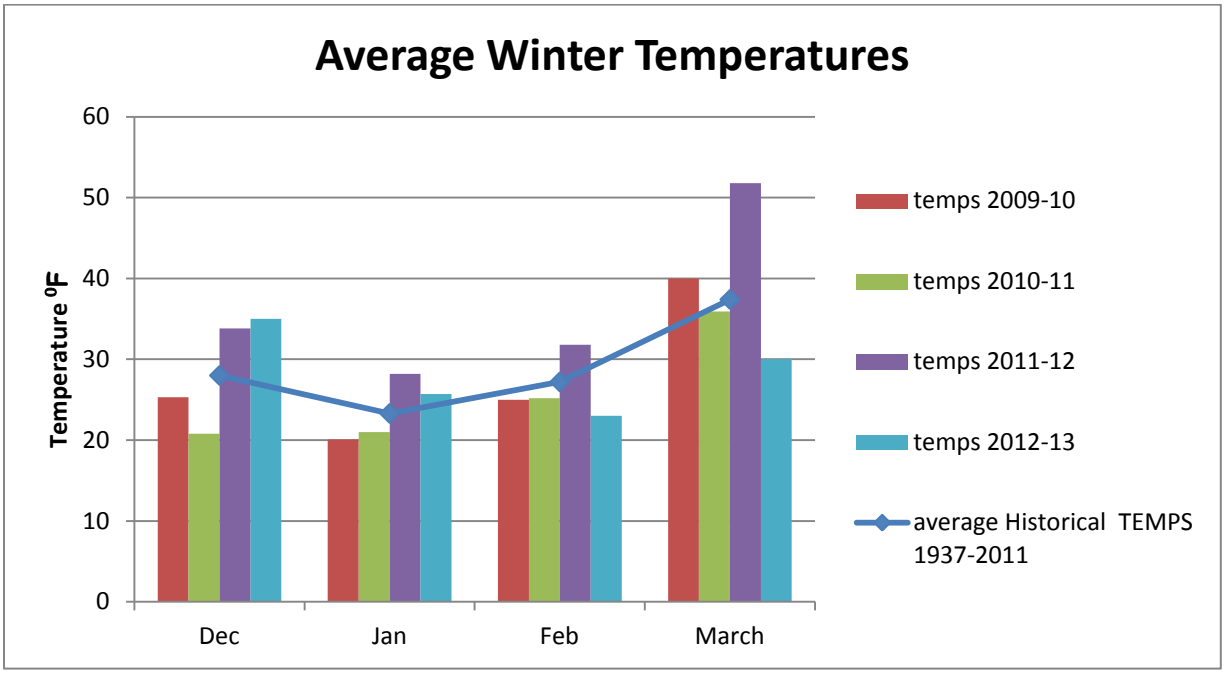
How are degree days calculated? The easiest way to determine daily degree days base 50 is to add the maximum temperature to the minimum temperature for a day, divide by two, and subtract 50. If the resulting number is greater than 0, then that is the number of degree days for that day. Otherwise the number of degree days for that day is zero. For example if the high of the day is 62 and the low is 42, we add 62 to 42 and divide by 2. The result is 52, the average temperature for the day. If we subtract 50 from 52, we end up with 2 degree days. If the result was below 50, we would assign 0 degree days to that day. We add up the total of the daily degree days since January 1, although usually we have very few base 50 degree days until April. That is the number we use to look for many insect pests. 50°F is used as a base because many plants, most insects that feed above the ground, and pathogens begin to grow and develop when the temperature is above 50°F (or 10°C).

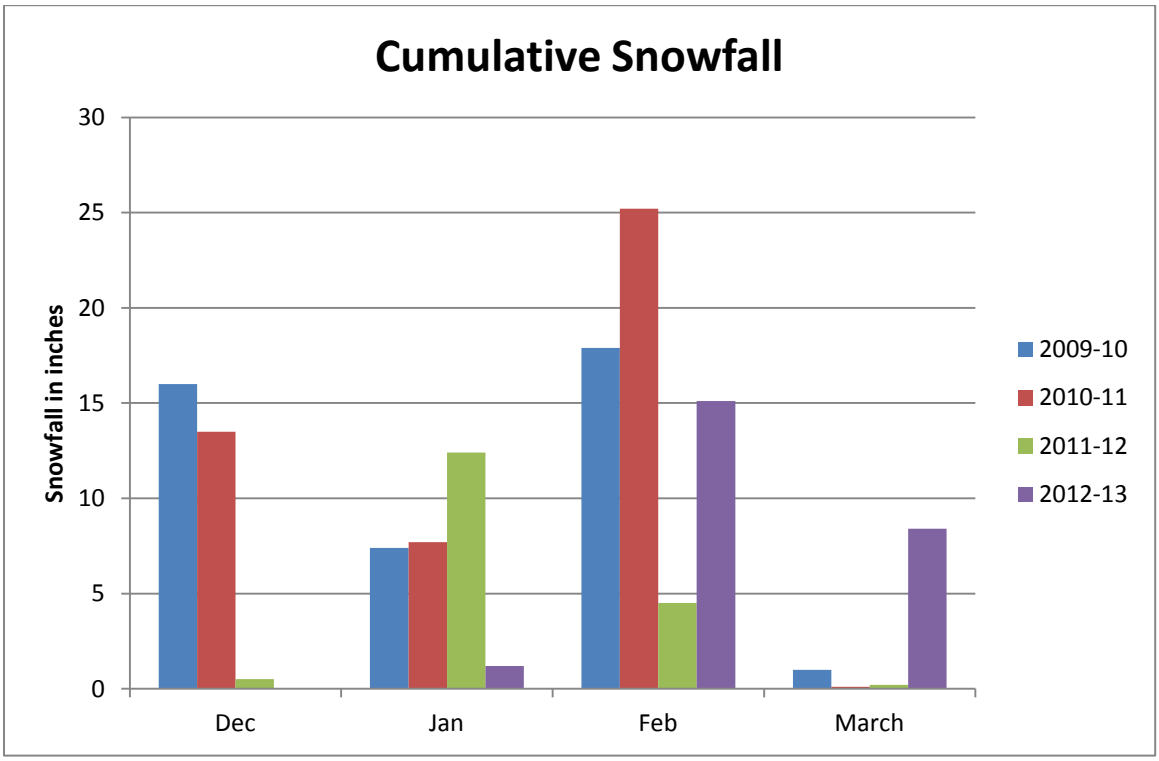
Consider microclimates when scouting for insects based on degree days. Some areas may be warmer or cooler than the place where the temperatures are recorded for the degree days. For example, temperatures may be higher on the south side of a light-colored granite building. Insects may hatch earlier in that location than they would in another site. A shady location on the east side of a building may be cooler, so insects may hatch later in that area.

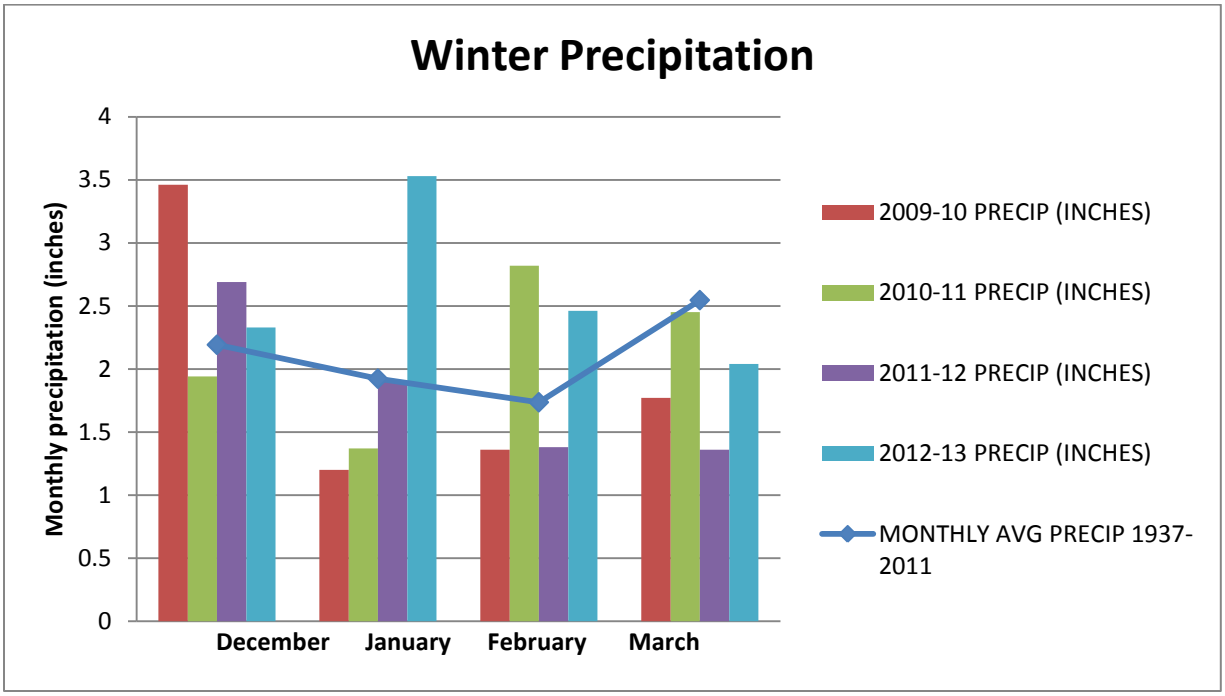
Don Orton's book Coincide is a great reference for use in Northern Illinois to determine what pests to look for at various degree days. In his book, Don also lists indicator plants, which relate pest life cycles to life cycles of common ornamental trees and shrubs. For example, when wild black cherry (*Prunus serotina*) is blooming, hawthorn leafminers, juniper tip midges, lilac borers, and oystershell scale (brown race) are susceptible to control.

Winter weather

The following charts show 2012-13 winter weather and compare it to previous years. Average winter temperatures were a bit above normal in December, but dropped as winter progressed. It still seems like spring is not quite here. Snowfall followed an opposite pattern; very little snow in December and January, then it really ramped up in February and March.


Average Winter Temperatures
Temperature ⁰F
60
50
40
30
20
10
0
Dec
Jan
Feb
March
temps 2009-10
temps 2010-11
temps 2011-12
temps 2012-13
average Historical TEMPS 1937-2011


Cumulative Snowfall
Snowfall in inches
30
25
20
15
10
5
0
Dec
Jan
Feb
March
2009-10
2010-11
2011-12
2012-13



What about the drought?

The year 2012 will certainly be remembered for the drought. As we move into 2013 are we still in a drought? There are a lot of factors to consider. At the reporting station at The Morton Arboretum we ended the year about 8.5 inches below average. The period January through March 2013 does show higher than average precipitation (8 inches compared to the average of 6.7 inches), but not enough to completely make up the deficit.

A recent report (March 24) from the USDA shows in Illinois "the statewide topsoil moisture looked great with 81 percent 'adequate'… Subsoil soil moisture was a little more pessimistic. Statewide numbers included 11 percent 'very short', 26 percent 'short', 58 percent 'adequate', and only 5 percent 'surplus'. Some of the lowest numbers were in the northern and western part of the state. Subsoil moisture is not critical in the spring but provides a useful reserve, or cushion, during periods of dry weather in the summer."

The National Oceanic and Atmospheric Administration (NOAA) just released the weather outlook for April through June. The Midwest should see above average temperatures through that time period. The probability of wetter than normal weather is about 40% for the Midwest.

In general, it does seem like the weather for the Midwest is going in the right direction. But be aware that the effects of the 2012 drought will be seen on plants this year. The 2012 drought was occurring at the time when many trees and shrubs were forming buds for 2013. We may see fewer flowers and reduced leafy growth on some woody plants. Drought-stressed trees and shrubs are often more open to attack by diseases and insects. We may see an increase in attacks by wood boring insects (any wood-boring insect, not just the emerald ash borer that is so prevalent at this time.)

Root systems may have been damaged by drought and this may limit the ability of some plants to take up enough water and nutrients from the soil. It is likely that some trees and shrubs suffered damage to fine root hairs during the drought. Plants that seem to be struggling may need to be watered

regularly. Please note that I said watered regularly. Plants that have compromised root systems may be further damaged by fertilizer. Plants stressed by the drought will need to rebuild damaged roots, but they will do this with the food they make through photosynthesis rather than the nutrients we put into the soil with fertilizer. Keeping plants properly watered will help them with the process ofphotosynthesis, so watering is far more important than fertilizing.

Dr. Fredric Miller recommends an article on the role of microbes in tree root health. The article is "Things Arborists Should Know About Microbes" by Jeffrey O. Dawson. It is published in the February 2013 issue of Arborist News. If you are not a subscriber, you can see the magazine at the Sterling Morton Library at The Morton Arboretum.

Salt damage

Overall, this winter was not too harsh, but the snows that came in February and March did lead to the use of de-icers, including sodium chloride (salt). Salt damage is a frequent problem on susceptible plants, especially to the side of the plant nearest the road. When salt is blown onto twigs, buds, and needles, it draws water out of plant tissue, causing it to dry and burn. On evergreens, dieback starts at the tips of needles. On deciduous plants, damage may not become apparent until warmer weather. Although more salt injury is caused by air-borne salt than by salt in the soil, plant injury can occur due to salt in soil when salty meltwater runs off into the soil or when salty snow is plowed or shoveled on the root zone of plants. High amounts of sodium can damage plants when it's taken up by the roots, causing toxicity or dehydration of roots.

Management: Avoid the use of sodium chloride around plants. Consider using alternative de-icing products. Grow salt-tolerant plants in high traffic areas. Susceptible plants in high traffic areas can be protected by constructing temporary barriers of burlap or a snowfence. When spring arrives, flush the soil with water to remove some of the excess salt. If soils are saturated from snow melt, this will not be feasible.

The Arboretum's plant selection brochure, "Salt Tolerant Trees and Shrubs" at http://www.mortonarb.org/index.php?option=com_content&view=article&id=845&Itemid=6 provides a list of salt tolerant plants.

Animal pests:

Voles

Vole damage (figure 2) is being reported this week. Vole damage usually occurs in winter, especially when we have snow cover. Voles resemble mice with short tails. They are active day and night year round. Voles will produce shallow runways in the lawn which become obvious when the snow melts. This damage is not serious and will disappear as the lawn begins to grow in spring.

Figure 2 Vole damage

The real damage occurs to shrubs and small trees. Voles eat the bark and the tissue below the bark of many shrubs and small trees during the winter when more suitable food supplies are scarce. If the vole girdles the branch or trunk, that branch will die.

Management*:* Keep mulch away from the base of small trees and shrubs. Place cylinders of hardware cloth of 1/4 inch mesh around plants. The cylinders must be deep enough into the soil to keep voles from tunneling under the screen and at least 18 inches high. Mouse traps may be used to manage small populations of voles.

Good web sites regarding animal damage:

http://www.mortonarb.org/tree-plant-advice/article/635/animal-damage.html
http://web.extension.illinois.edu/wildlife/directory.cfm

The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Clinic Assistant and edited by Stephanie Adams, M.S. Research Specialist in Plant Heath Care; Fredric Miller, Ph.D., Research Entomologist at The Morton Arboretum and Professor at Joliet Junior College; Doris Taylor, Plant Information Specialist, and Carol Belshaw, an 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 the volunteers who will be scouting for us this season. They find most of the insects and diseases that are in this report. The Scouting Volunteers include: LeeAnn Cosper, Deborah Finch-Murphy, Anne Finn, Ann Klingele, Arnis Krusow, Loraine Miranda, Bill Sheahan and Kathy Stephens. Your hard work is appreciated.

Literature recommendation:

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. This book may be purchased through the publisher at: http://www.laboroflove conservatory.com/

The Commercial Landscape & Turfgrass Pest Management Handbook (CPM), for commercial applicators, and the Home, Yard & Garden Pest Guide (HYG) for homeowners from the University of Illinois, are available by calling (800-345-6087).

This report is available as a PDF at The Morton Arboretum website at http://www.mortonarb.org/tree-plant-advice.html

For pest and disease questions, please contact the Plant Clinic at (630) 719-2424 between 10:00 and 4:00 Mondays through Saturdays or email plantclinic@mortonarb.org . Inquiries or comments about the PHC reports should be directed to Sharon Yiesla at syiesla@mortonarb.org .