Illinois Trees

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Summer 2023

Summer Time at ISU!

by April Toney

This year's summer conference left the attendees inspired by the knowledge that was shared and the connections that were made. From the picturesque weather to the invaluable field experiences, the conference proved to be a memorable event for all who participated.

Upon arrival, all attendees received a drawstring bag and coupon from Arbsession. A big thank you to Arbsession for providing the attendee gifts.

Wednesday evening set the stage for an evening of networking. Over a great dinner and a cash bar, attendees had ample opportunity to catch up with familiar faces and make new acquaintances. The round table discussions proved to be an invaluable platform, fostering thought-provoking exchanges and deepening our understanding of the subjects at hand.

We would like to extend a sincere thank you to the Welcome Reception Sponsors:
Davey Resource Group and Kramer Tree Specialists.

Thursday started off with a wonderful breakfast that energized everyone for a day of exploration. The group divided into three and embarked on a captivating visit to the Arboretum at the ISU campus. Participants had the privilege of witnessing and discussing abiotic and biotic diseases, field diagnosis of insect and mite pests, and view an intriguing tree risk assessment utilizing advanced tools like the resistograph and a tomograph.

At noon, everyone reconvened to enjoy a well-deserved lunch, providing a chance to reflect on the morning's enlightening experiences and exchange thoughts with fellow attendees.

We would like to extend a sincere thank you to the Lunch Sponsors:
Arborjet/Ecologel and Davey Resource Group.

The afternoon sessions delved deeper into the topics explored during the field tour at the Arboretum, offering invaluable insights and expanding our knowledge base. The collective expertise and passion shared by the

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ILLINOIS ARBORIST ASSOCIATION
INTERNATIONAL SOCIETY OF ARBORICULTURE

Don't forget to visit the IAA Website for updates on events, certification classes, and important issues impacting our industry.

IAA Board of Directors

Illinois Arborist Association

Mission Statement

"Foster interest, establish standards, exchange professional ideas and pursue scientific research in Arboriculture"

President's Message

Hello members,

The summer months seem to be moving in fast this year. I'm not sure if we had a spring or not this year. We've really started the season off with a bang. I hope you were able to make it out to the Tree Climbing Championship at Salt Creek Forest Preserve. If not, you missed a cool experience. The weather was perfect and so was the competition. It is amazing to see men and women competing at such a high level, while encouraging and helping others get better. It was very cool to see everyone cheering one another on. Even though this is an individual competition, it seemed more like a team sport. Congratulations to the first place winners Libby Bower & Beau Nagan who will represent the chapter this August in Albuquerque New Mexico. IAA continues to strive to put on the best events and training programs for our members. Another great opportunity is right around the corner. IAA will be back in Bloomington – Normal for the summer conference. The IAA Board and Conference Committee have lined up some fantastic presentations and speakers. I look forward to seeing familiar faces but even more excited about seeing some new ones. Events like these are a great opportunity to learn from one another and build connections that will last throughout your career and lifetime. Get ready for an educational and fun packed summer. As always, I want to thank the IAA Board, Executive Director, and staff for all the tremendous hard work they put in to making this organization so successful. Thank you to all the volunteers who have dedicated their time helping with programs, events, and committees. The IAA does not grow without you. I look forward to seeing you all soon. Be safe, never stop learning, and always continue to inspire.

Illinois Arborist Association President,
Tony Dati

Summer Time at ISU! (cont.)

presenters and participants alike made for an enriching and memorable learning experience.

We would also like to thank our basic conference sponsors: Graf Tree Care, Great Lakes Urban Forestry Management, Goodmark Nurseries, Russo, Spring Grove Nursery.

Lastly, we express our appreciation to the Illinois Department of Natural Resources for their generous sponsorship as the full conference sponsor. Their commitment to fostering education and advancement in the field of arboriculture and urban forestry has been truly commendable.

In conclusion, we would like to thank all the attendees, sponsors, exhibitors, and contributors who made this year's Summer Conference an extraordinary event. Your enthusiasm, expertise, and camaraderie have created cherished memories that will stay with us for years to come. We look forward to see you all at future conferences as we continue our shared journey of knowledge and growth.

Golf Outing

Friday August 11th, 2023

~

Bonnie Brook Golf Course, Waukegan, IL.

12:00pm Lunch

~

1:00 Shot Gun Start

~

Please Visit our website to register to Attend or Sponsor this event!

Drought, Trees Insect Pests, and Abiotic Disorders

by Dr. Fredric Miller

As you know, vast areas of the Midwest and Illinois have been and are currently under abnormally dry to drought conditions. The dry weather really started back in April and May with below normal spring precipitation.

So, to get some perspective on precipitation for the first six months of 2023 and how it is affecting our trees this summer, let's have a brief update. **Please note:** The following climatological information summary reported here is provided by Illinois Climatologist Mr. Trent Ford. **For additional details refer to Appendix A at the end of this article and the *Illinois State Climatologist web site.***

January through March, 2023 started off with good amounts of precipitation which came primarily in the form of rain and/or non-accumulating snow. Both January and February were wetter than normal statewide, and March followed the same pattern. For the first three months of 2023, it has been the top 10 wettest period including Chicago (4th wettest), Rockford (6th wettest), and Peoria (10th wettest). Statewide, the average total March precipitation was 4.46 inches or 1.24 inches above the 1991–2020 average and the 23rd wettest on record statewide.

However, beginning in April, things changed considerably. According to Illinois State Climatologist Trent Ford, April is typically associated with spring showers. **In fact, the first half of the month was very dry, and the week of April 8 to 13 was completely dry across the entire state.** The last time the entire state measured exactly 0 inches of precipitation for a full 7 days was November 11–17, 1999. The latter half of April was wetter and cooler but did not make up for the very dry start to the month. Overall, the preliminary statewide average total April precipitation was 2.75 inches or 1.49 inches below the 1991–2020 average and the 37th driest on record statewide.

May is the climatological third wettest month of the year for the state of Illinois, just behind June and July. **Most of the state ended the month between 1 and 4 inches drier than normal. The dryness in May was most intense along the Missouri border and in northeast Illinois, where many places had less than 1 inch of total rainfall. Chicago had only 0.71 inches last month, making it the fourth driest May on record. The months of April and May together were also the eighth driest on record in Chicago and the ninth driest on record in Champaign. Overall, the preliminary statewide average total May precipitation was 2.71 inches or 2.06 inches below the 1991–2020 average and the 28th driest on record statewide. This is clearly born out in the 27 June 2023 Drought Monitor Map (See Figure 1). As I write this article here in early July, the drought continues with most of the state considered to be in a moderate to severe drought (Figure 1: Drought Monitor Map below).**

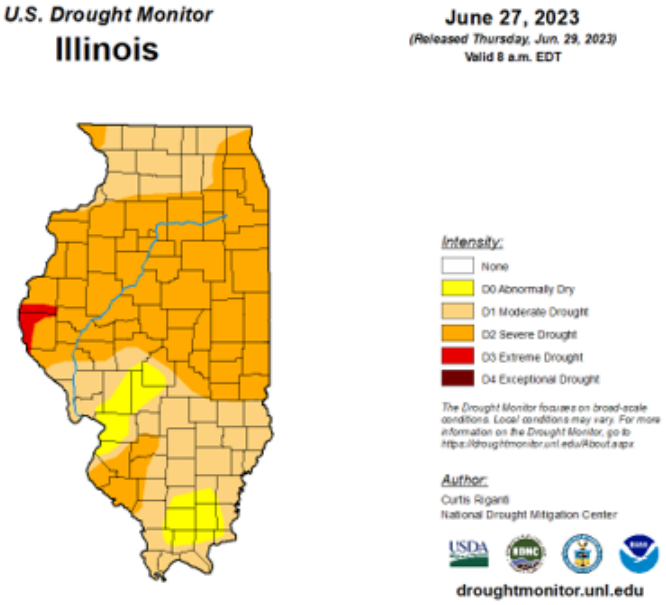

Figure 1: Illinois Drought Monitor for 27 June 2023

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~ Calendar of Events ~

August Events

August 11th - IAA Annual Golf Outing - Bonniebrook Golf Course
Waukegan, Illinois
Click here to register

August 18th, Community Hands-On Training - Felling and Chipper Safety (7:30pm - 3:30pm)
1813 Springfield Rd. Bloomington, Iliinois
Click here to register

August 21st - October 30th, ISA Certified Arborist Exam Prep Course (6:00pm - 8:30pm)
Lombard, Illinois - Village Hall Community Room
Click here to register

August 23rd, Community Hands-On Training - Chainsaw Safety & Felling (8:00pm - 4:00pm)
2204 Dewitt Ave. Mattoon, Iliinois
Click here to register

August 30th, TreeBiz Social (3:00pm - 6:00pm)
Lisle, Illinois - Morton Arboretum @The Gateway to Tree Science Exhibit
Click here to register

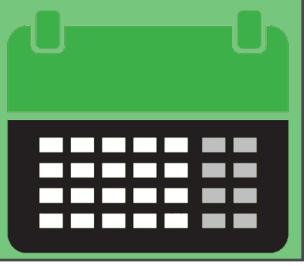
September Events

September 5th & 6th, Advanced Training - Rigging Level 1 (8:00pm -3:00pm)
Elk Grove Village, Illinois - Public Works Building
Click here to register

September 7th - November 2nd, ISA Certified Arborist Exam Prep Course (6:00pm - 8:30pm)
Homewood, Illinois
Click here to register

September 8th & 9th, Advanced Training - Insect & Mite Pests - PDM Domain (8:00pm -3:00pm)
15151 Winfield Rd. Wheaton, Illinois - Cantigny - Education Center
Click here to register

September 14th - 15th, IAA Careers in Aboriculture Demonstation Event
Lisle, Illinois - The Morton Arboretum
Click here to register



Drought, Trees Insect Pests, and Abiotic Disorders (cont.)

Based on current research, I will attempt to explain how extremely dry weather affects the health of woody plants, insect populations, and abiotic disorders and provide some practical PHC tactics that can be employed to help our plants manage during this very dry, droughty summer.

Just like all of us, all living organisms require water and plants are no exception. When plants are under water stress, they change physiologically which, depending on the length of the moisture stress and coupled with hot temperatures, can make them more vulnerable to lethal insect pests, diseases, and other abiotic (i.e. non-living) factors. A major factor is the relationship between plant water stress and available nitrogen (N). Nitrogen (N) is considered the most critical plant nutrient among the macro-nutrients and is usually the nutrient in the shortage supply. Nitrogen (N) is an important component of amino acids (AAs) which are the building blocks of proteins and enzymes, and is the 'N' in DNA and RNA, just to mention a couple of examples **(Kolb et al., 2016).**

Another important role N plays is in the production of allelochemicals which are chemical plants produce to protect themselves ("chemical warfare") from insect pests, pathogens, and environmental factors. Plant water stress can impact available N in the plant and as a result, can impact protein metabolism and amino acid (AA) synthesis. Additionally, to offset water stress, plants produce N-containing osmo-protectants. These biochemical processes can result in an increase in plant N improving growth and reproduction of insect herbivores **(Kolb, et al., 2016).**

Different tree species react differently to water stress. For example, water stress for **broad-leaved hardwood trees** generally decreases water content and increases concentrations of soluble (i.e. able to mix and move in solution) N and secondary metabolites, but they may have negative, positive, and/or neutral effects on the specific insect species (Kolb et al., 2016).

In conifers, water stress may improve the host quality to herbivores favoring a balance of nutrients important for insect growth and development. Oleoresin is a key component in determining resistance to invading bark beetles. A common vein of thought among forest health managers is that "drought stress compromises tree defenses to the point where outbreaks of aggressive species (i.e. bark beetles and wood-borers) are allowed" (Kolb et al., 2016).

Further, if dry conditions persist (like we are currently observing), chronic water stress can begin to affect plant turgor pressure (i.e. the pressure cell fluids exert against the cell wall and allows leaves to fully expand) and the related water content in the cell walls. You may have noticed this phenomenon on trees with large leaves (i.e. maples, catalpa, sycamores) where the leaves will begin to droop in late afternoon under hot, dry conditions. This is because the turgor pressure in the leaves has dropped too low and the plant cannot keep up with the transpiration demands during the day. With adequate soil moisture, the plants can usually restore the water levels in the leaves overnight, but if soil moisture levels are depleted or at very low levels, then the plant cannot recover and that is when things get ugly. As a result, wilted plants will have significantly higher levels of foliar N, but the phloem sap will be more viscous.

From an insect pest perspective, how does drought affect insect populations and their interaction with stressed trees? Please note: Information presented in this section is taken from two articles entitled Forest Insect and Fungal Pathogen Responses to Drought, Chapter 6, by Kolb et al., 2016 and **Observed and anticipated impacts of drought of forest insects and disease in the United States by Kolb, et al., 2016. I highly recommend both of these articles for further reading.**

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Drought, Trees Insect Pests, and Abiotic Disorders (cont.)

Insect performance and impacts during and following drought differ according to type of food substrate (i.e. woody or foliar), feeding guild, duration of stress, the type and importance of host defenses, and the hosts intrinsic capacity for drought resistance (Kolb, et al., 2016).

SAP-FEEDING INSECTS:
As mentioned earlier, the duration (i.e. intermittent or chronic) of water stress appears to impact pest response. I have received a number of reports so far this summer that sap-feeding insects (i.e. scales, plant bugs, aphids) and spider mites) are heavier than normal this year. I suspect the plentiful rainfall we received in late winter and early spring prior to the onset of our current drought may have contributed to their build up. The intermittent water stress earlier this summer may have contributed to the higher levels of sap-feeding pests.

In order to feed, sap-feeders require positive turgor pressure and water content. Therefore with prolonged water stress we may see a decrease in pest development and populations. Bottom line, large sap-feeding insect populations may increase on intermittently stressed plants, only moderately on non-stressed control plants, and increase the least on continuously stressed plants. If water stress is temporarily relaxed, then phloem N is enhanced, positive cell turgor returns, and N is more available for phloem feeders. Sporadic recovery of positive cell turgor, combined with periods of increased phloem N availability, may result in the greatest population increase. Higher turgor pressure is required for phloem feeders to ingest soluble N. Additionally, sap-feeders perform poorly on water-stressed plants, survivorship is adversely affected resulting in lower pest density, but there is no effect on ovipositional preference and fecundity. (Kolb et al., 2016).

Take home message: An optimum plant host would be one that experiences intermediate water stress and then recovers following abundant precipitation during insect feeding. This response is non-linear as shown in Figure 2.

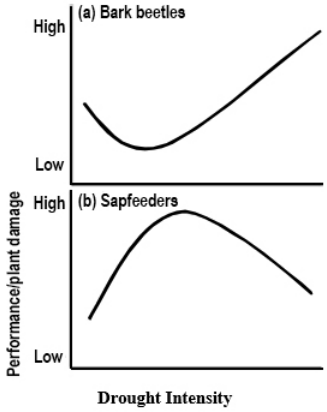

Figure 2: Non-linear response for bark beetle and sap-feeding insect in response to drought intensity (Taken from: Kolb et al, 2016, Figures 6.6 and 6.7)

On the flip side, when we have a warm and dry late spring and early summer, most fungi that attack insects usually do not develop allowing for higher insect survival rates. This is commonly seen with spider mites (i.e. two-spotted spider mite) as they like it hot and dry. Spruce spider mites are more common in the early to late spring when it is cooler. Additionally, heavy, drenching rains can dislodge small insects (i.e. aphids) from plants and some may also drown due to periodic flooding.

LEAF-FEEDING INSECTS:
For leaf-chewing insects, the picture is much less clear. Most insect defoliators feed on leaves with high protein and water content, low leaf toughness, and low concentrations of secondary metabolites (i.e. usually “biproducts” of plant metabolism and not essential for day-to-day functions like photosynthesis and respiration). Insect survival, density, and overall performance is adversely affected on chronically water stressed plants including moths, sawflies, and beetles mainly due to tougher foliage resulting from water stress, and a reduction in N availability. Additionally, it is thought that intermittent stress may not benefit chewing insects due to allelochemical production which are avoided by sap-feeders which feed in the

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Mark Your Calendar: 41st IAA Annual Conference November 6-8, 2023!

Why Attend?
Your profession continues to evolve at a rapid pace. Yesterday's answers may not be the best solutions to today's problems. The IAA conference is designed to provide the latest tools, resources and research findings to help you best manage the urban forest.

- **Network:** Strategize with your peers around the state and some of the top professionals around the country.
- **Education**: Educational tracks for Commercial, Municipal, Utility, Research, Joseph Kramer Arboriculture Demonstration Area, Spanish Sessions, Plant Health Care Demonstration Area, Knot Tying Station and more!
- **Equipment & Supplies**: Visit over 25 tree care suppliers and see the latest products and equipment.

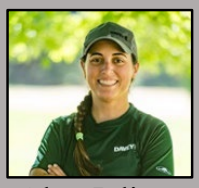
ILLINOIS ARBORIST ASSOCIATION
INTERNATIONAL SOCIETY OF ARBORICULTURE

Keynote Speakers

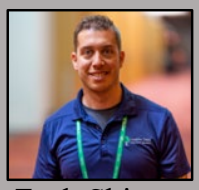

John Ball


David VanWy


Steve Ludwig


Alex Julius


Chad Rigsby


Zack Shier


Dr. Fredric Miller

Illinois Arborist Association 41st Annual Conference & Trade Show

November 6th – 8th , 2023

We are thrilled to invite you to participate in the Illinois Arborist Association 41st Annual Conference & Trade Show the premier event in the Arboriculture sector! This year's trade show promises to be bigger and better than ever, featuring an impressive lineup of educational sessions and exciting demonstration areas designed to engage attendees.

Use the QR Code to access the conference registration form by placing your phone camera over the code and clicking the link that appears.

~ Register ~

*** Early Bird Registration Ends October 24th**

TREE Fund offers research grants, scholarships, and educational programs for the skilled professionals who care for our urban and community forests, and the millions of municipalities, businesses, and homeowners who depend on them.

Through the Larry R. Hall Memorial Scholarship, TREE Fund works to educate and empower rising generations of tree care professionals. These scholarships have been funded through the generous support of The Illinois Arborist Association, tree care companies, and countless individuals like you.

TREE Fund exists to serve. But we cannot serve without your support. Visit **treefund.org** to learn more about how you can empower the science that underpins your work.

TREE FUND
Cultivating Innovation

vascular system. Reduced water content and elevated allelochemicals (phenols) can result in poor caterpillar performance on stressed plants while leaf miners benefit from water stressed plants due to elevated leaf N and avoidance of allelochemicals by feeding in the mesophyll (i.e. middle) leaf layers. Water stress apparently does not have any effect on Lepidopteran and Dipteran leaf miners (Kolb, et al., 2016).

It should be noted that trees with narrow xylem conduits (i.e. gymnosperms) can generally maintain physiological function and recover more from severe drought that trees that have wide xylem conduits (i.e. most angiosperms) which can lead to greater vulnerability to insect attack (Kolb, et al., 2016).

Take home message: There is not clear message. The magnitude and direction of responses to drought by defoliators are influenced by the severity and duration of the drought stress. Also, drought-stressed plants are usually warmer (15oC) than unstressed plants which can speed up insect development.

Other factors that may affect leaf-feeding insects, such as insect fungi (i.e. Entomophaga maimaiga) which attack spongy moth (formerly gypsy moth) caterpillars, requires high humidity levels and is usually not a major control factor during warm and/or dry springs.

BARK BEETLES AND WOOD-BORING INSECTS

For our final group, wood-boring insects and bark beetles, bark beetles' benefit from water stress due to decreases in oleoresin pressure which is particularly important for bark beetles in conifers. A reduction bark moisture and lower incidence of drowning in saturated bark tissue was observed for long horned beetle larvae on Eucalyptus (Kolb et al., 2016).

Terpenes are a common tree defense chemical (constituent and inducible) found in tree resin. The number and size of resin ducts in the xylem and phloem is also important. Both terpene production and resin duct formation depend on carbon allocation

Intense drought reduces C assimilation, water transport, and cell turgor thereby decreasing the synthesis and mobilization of secondary metabolites such as terpenes. The level of water stress may also influence the allocation of C for defense and growth. For example, mountain pine beetle (MPB) outbreaks in the western states have been attributed to prolonged drought and above winter temperatures that allow for populations to build, but can vary with the insect species.

Conversely, moderate water stress can lead to an increase in the production of defensive chemicals because growth has been curtailed and more C is available for resin synthesis and duct formation. Some relative terpene concentrations can vary (i.e. ethanol, alpha and beta pinenes), and can reduce both the growth and development of insect populations

Take home message: Studies and research suggest that moderate drought/tree water stress can reduce bark beetle performance and subsequent tree mortality. Conversely, intense drought stress can increase bark beetle performance and tree mortality, and likely magnifies the effect. Depending on conditions, overall, insect response is nonlinear as shown in Figure 1.

In conclusion, sap-feeding insects (i.e., phloem and mesophyll feeders) are negatively affected by continuous water stress; **leaf feeders** do not appear to be significantly affected by intermittent water stress except for leaf miners; and **bark beetles and wood-boring** insects appear to be linked to environmental effects and natural enemies (Kolb, et al., 2016).

For abiotic (non-living) disorders, the lack of adequate water will be manifested in loss of

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IAA Careers in Arboriculture Demonstration Event

Our workforce development committee has been working non-stop to put together an all-new event this year, the IAA Careers in Arboriculture Demonstration Event! This will take the place of the career fair that we have had at our annual conference the past many years while stepping up the game to make it more of an interactive, demonstration event of everyday work in the arboriculture industry. A huge thank you to The Morton Arboretum for offering up The Gateway to Tree Science area to host the entirety of this event.

The event is a two-day event, designed to expose attendees to a variety of work in the arboriculture industry. Attendees will watch live demonstrations of practices such as tree climbing, plant health care, pruning, tree spade planting, and much, much more. Industry professionals will have the opportunity to interact directly with career-seeking professionals and help them find their passion in arboriculture and future career opportunities. Following day 1 of the event, attendees and the industry will enjoy an evening dinner combined with a career fair, helping to bring together the future workforce of arboriculture and current industry professionals.

The first 10 registered attendees will be provided a free night stay at the hotel where the evening dinner will be hosted. There are ample sponsorship opportunities and career fair booth spaces available, a great opportunity to get your business or organization represented in front of career-seeking professionals in the arboriculture industry.

For more details, click here.

Paul Filary
IAA Commercial Director

turgor pressure and cell wall water content as previous described, death of cell organelles and plant tissue, and plant death if the drought is severe enough. This is particularly critical for fine roots which are essential in the uptake of water and nutrients for the tree. The death of the fine roots can be a major problem as the plant has to expend vital resources to repair and rebuild its "root infrastructure". Most of these **fine roots** reside in the top 12 to 18" of the soil and are vulnerable to high soil temperatures. In the most recent Morton Arboretum (TMA) PHC newsletter, bare soil temperatures in the top 1-4 inches were between 900F and 100oF in contrast to temperatures at the same depth under sod that were 20oF cooler. Not that I am recommending sod under trees, but this bares out the importance of mulching around trees. These high temperatures are not only lethal to fine roots and root hairs, but can also be detrimental to many of the specialized soil microbes that are vital to such soil processes as nitrogen fixation. Larger critters (i.e. earthworms, insects, etc.) that are important in soil conditioning and organic matter decomposition can also be impacted.

Another major issue is **the ability of trees to take up water during drought**. In very dry soils, water will move via osmosis from tree roots to the adjoining soil because there is more "pure water" in the roots relative to the soil, The reverse is also true. When there is a higher concentration of "pure water" in the soil relative to the roots, water will move into the root via passive osmosis. Plants like this because it does not require any energy on the part of the plant to acquire water. Once soils become very dry, the layer of water molecules (i.e. water film) adhering to soil particles is very thin and the water molecules are held so tightly that the plants cannot acquire water. This results in wilting and death of plant tissues. Once the plant begins to suffer from drought stress, then is severely compromised and is not able to fight insects (i.e. borers and bark beetles) and stress related pathogens, that under normal conditions would not be a problem.

Also, the lack of soil moisture drastically affects the tree's **ability to make "food" via photosynthesis**. This "food" is what the tree uses to pay its bills such as growth, reproduction, repairs, defense, and maintenance. Remembering our basic biology class in school, carbon dioxide (CO2) + water (H2O), in the presence of sunlight, is needed for photosynthesis resulting in production of carbohydrates and sugars (i.e. "food"). If the tree cannot make enough food to supply its energy needs, then it has to begin make some tough choices'. As mentioned earlier, many plants undergo physiological changes when they come under stress of any kind and/or origin which can make them more vulnerable to pests, diseases, and non-living (abiotic) problems. For example, in the 1970s and 1980s, oak trees in the northeast experienced multiple years of defoliation by gypsy moth (now called "spongy moth") and as a result oak trees started dying from the two-lined chestnut borer (TLCB) and Armillaria root rot. Neither of these pests are able to invade and colonize a healthy tree, but repeated defoliations lowered the tree's ability to fight them off. Of course, defoliation from an insect is just one example. Other causes of defoliation such as foliar leaf diseases, chemical damage, and weather events can have the same effect. Remember, the leaves are a tree's "food factory" and anything that interrupts food making will have long-term consequences.

All of this ultimately leads to the "**decline spiral**" as defined and described by Manion (Figure 3). Once a tree starts down this path, it is very hard to reverse course, so our best course of action is to practice good PHC practices and never go there.

What can we do to avoid drought-related insect pest and abiotic disorders? Of course, we cannot control the weather, but by using recommended and established PHC tactics we can help mitigate

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Drought, Trees Insect Pests, and Abiotic Disorders (cont.)

Figure 3: Tree Decline Spiral (Taken from Manion and LaChance, 1992)

some of the effects of hot, dry weather and give our trees a fighting chance.

Suggested PHC tactics that can be employed.

- Water, water, water. As a guide, during hot dry weather, trees need at least one inch equivalent of irrigation/rainfall per week.
- Mulch around trees to a depth of no more than 3-4 inches, more is not better and do not mound the mulch around the base of the tree. As mulch dries out, it becomes hydrophobic and will shed water. The mulch ring should be a shallow bowl and is designed to catch water and allow it to soak in.
- Use "gators" if available. These can be filled with water and then lot the water soak in slowly
- If a tree is newly planted (i.e. ball and burlap) or prone to sap-feeding and/or leaf-feeding insects it may need some TLC until its root system is firmly established. Adequate soil moisture is even more critical as most of the root system was left in the nursery when it was dug. The main objective is to help the tree regenerate its root system.
- Avoid fertilizing until the tree has developed an adequate root system (i.e. one year for each caliper inch). Fertilizing a B&B tree will only cause more problems because the tree does not have a sufficient root system to take up the nutrients especially when soils are dry as nutrients can only be taken up in solution. Additionally, fertilizers are salts and will draw moisture out of the roots, drying them out.
- Trees grown in a container with a good root system will also need water and interesting enough will need to be watered more frequently than a B&B planted tree. Why, because with a container tree, they do not have the soil volume to hold water that a B&B grown tree has (i.e. a considerable amount of the container volume is occupied by roots), so they require more frequent waterings.
- For all of the above recommendations, pay close attention to soil texture and any subsurface obstructions or compacted layers that will inhibit drainage. Heavy clay soils will hold water longer and tighter, and will take longer to dry out. If you over water then root-rotting fungi (i.e. Phytophthora and Pythium) was develop and will kill roots. In contrast, sandy soils will drain much more quickly and can be "droughty". Plants growing in these soils will require more frequent waterings. Finally, be aware of in-ground irrigation systems. These systems are designed for watering turf, not trees. Depending on the location and orientation of the sprinkler head, the tree may be underwatered or overwatered leading to issues described above.

Suggested References and Further Readings

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APPENDIX A: DETAILED CLIMATE SUMMARY FOR JANUARY THROUGH JUNE, 2023 (Taken from monthly Illinois Climatological Reports prepared by Mr. Trent Ford)

- February is one of the climatological driest months of the year; but in 2023, we had normal precipitation ranging from around 2 inches in south-central Illinois to over 4 inches in southern Illinois.

- Additionally, February, along with January, is one of the snowiest months of the year climatologically across the state. However, January and February had below normal snowfall. Most areas of the state saw above normal February precipitation, but most of it fell as rain or non-accumulating snow.

- Total March precipitation ranged from just over 3 inches in northwest Illinois to nearly 12 inches in far southern Illinois. While the northern third of the state was around 1 to 2 inches wetter than normal last month, parts of central and southern Illinois were 3 to 6 inches wetter than normal.

- In the snowfall department, above normal snowfall in March in northwest Illinois pushed the 2022-23 season-to-date snowfall 2 to 8 inches above normal, while the rest of the state was between 2 and 15 inches below normal snowfall this season. The snowfall deficits were especially large this season in parts of central and northeastern Illinois.

- Total April precipitation ranged from nearly 8 inches in parts of southern Illinois to around 1 inch in parts of east-central Illinois. Although most of southern Illinois and parts of northern Illinois were near to 1 inch wetter than normal, virtually everywhere between interstates 70 and 80 were 1 to 3 inches drier than normal last month

- Unfortunately, last month did not bring the typical May showers for most of the state, continuing a dry pattern from April. May total precipitation ranged from nearly 10 inches in isolated parts of central Illinois to less than 1 inch in northeast Illinois. While small parts of central Illinois picked up 2 to 4 inches above normal.

In Memoriam

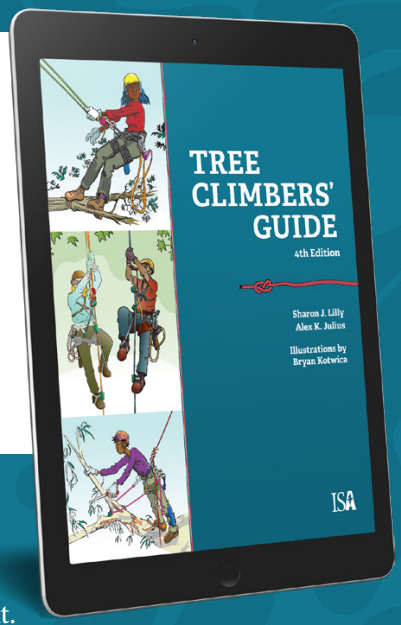
It is with a heavy heart that we announce the passing of Norma Lager.

Norma Deane Lager (Glasford) was born on September 25, 1942, in Makanda, Illinois. Norma would accompany her husband Michael Lager to the Illinois Arborist Association Conference each fall and help manage the IAA booth and sell raffle tickets for the TREE Fund raffle held in conjunction with the conference. Norma will be greatly missed by all.

TREE CLIMBERS' GUIDE, 4TH EDITION

The *Tree Climbers' Guide* is one of the few books written specifically for tree climbers and covers aspects of a climber's work such as pruning, rigging, and cabling.

This guide also serves as a study guide for the ISA Certified Tree Worker Climber Specialist® exam.*



THE 4TH EDITION HAS BEEN UPDATED TO INCLUDE:

- More than 270 illustrations to help clarify and complement the text.
- Three new chapters: Moving Rope Systems (MRS), Stationary Rope Systems (SRS), and Climbing Equipment.
- Key terms and workbook exercises in each chapter, with workbook answers, a glossary, and recommended resources in the back of the book.

**Any educational or preparatory material, whether published by ISA or not, should NOT be considered the sole source of information for an ISA certification examination. This publication and the ISA certification program exams are developed through separate processes and entities.*

Want to Volunteer?

Call April at 877-617-8887

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ILLINOIS ARBORIST ASSOCIATION
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ILLINOIS ARBORIST ASSOCIATION
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November 7th & 8th, 2023

In-Person and Virtual

41st Annual Conference & Trade Show Agenda

Professionalism in Arboriculture

Illinois Arborist Association

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IAA 41st Annual Conference & Trade Show
Even Hotel Chicago & Tinley Park Convention Center
November 7th & 8th

We are excited for this year's IAA Annual Conference, Trade Show & Job Fair! We have an outstanding lineup of speakers from all over and we're committed to creating an event experience where our attendees, speakers, and exhibitors can safely and effectively conduct business and provide quality learning and networking opportunities. IAA's COVID Plan is in accordance with state, local and Illinois Convention Center requirements. We're actively monitoring and adapting these plans so that we are doing our part to keep you a safe and enjoyable learning environment.

IAA Annual Conference & Trade Show
Advanced Training - Monday Sessions - November 6th, 2023
Monday Sessions are In-Person

Time: 8:00am–4:30pm **CEU's Available:**	**Title: Advanced Training: Insect and Mite Pest Management** – *Fredric Miller* **Description:** This advanced training (AT) class will focus on the proper identification, biology, and management of insect and mite pests affecting woody plants. Emphasis will be on current PHC tactics and strategies for use in arboriculture, landscape, and urban forest settings. An update will provided on newly emerging pests and invasive pests and insect-pathogen complexes (i.e. spotted lantern fly (SLF), elm zigzag sawfly, and drippy disease of oaks). Weather permitting a walking field exercise will be conducted on the conference grounds.
Time: 8:00am-4:30pm **CEU's Available:**	**Title: Tree Risk Assessment in the Urban Environment** – *Steve Lane,* Graf Tree Care **Description: TBD**

IAA Annual Conference & Trade Show
Tuesday November 7th , 2023

General Sessions - Streamed Live

8:00am-9:00am CEU's Available: 1	**Buyer Beware: Do You Know What You're Buying?** – *Alex Julius, Davey* **Description:** Do you buy or use climbing equipment? With so much equipment on the market these days, it's challenging to know what to buy and from where to buy it. And how can we be certain that what we ordered is what we think it is? How can we be responsible consumers? Learn how to interpret the nuances of climbing equipment and ensure that what you are buying is safe for use in tree care.
9:00am-10:00am **CEU's Available: 1**	**Title & Speaker: TBD** **Description: TBD**
10:00am-10:30am	**Break with Exhibitors**
10:30am-11:15am	**Presentation of Awards and Introduction of New Board Members**
11:15am-12:00pm **CEU's Available: .75**	**Root Management in the Urban Landscape: Research from the *BTRL*** – *Chad Rigsby,* The Bartlett Tree Research Laboratories **Description:** These talk will cover the latest in root management research from the Bartlett Tree Research Laboratories. Of particular note will be managing abiotic and biotic root stresses and the promotion of root growth.

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12:00pm-1:00pm	**Lunch with Exhibitors**
	Municipal Sessions
1:00pm-2:00pm CEU's Available: 1	**Increasing Tree Canopy Using Bare Root Trees and Gravel Beds** – *Matt Koepnick,* City of Racine **Descripion:** The City of Racine (population 79,000) has leveraged the use of bare root trees along with a gravel bed to plant nearly 11,000 trees since 2012. This presentation will discuss Racine's tree planting program and the benefits of using bare root trees and gravel beds. We will cover advantages, disadvantages, bare root tree costs, gravel bed construction methods and costs, and gravel bed maintenance needs.
2:00pm-2:45pm CEU''s Available: .75	**Tree Spacing Standards in the Municipal Environment** – *Jim Semelka,* Great Lakes Urban Forestry Management **Description:** Municipal tree planting standards specifying distances between trees vary greatly from town to town, if addressed at all. Is there an "ideal" spacing for municipal parkway trees, and if so, how can that be determined and implemented? How much room do parkway trees need to develop proper growth habits and symmetrical crowns? Do adjacent trees co-operate or compete? When are Ornamentals or "special use" trees appropriate? We will look at some examples of how tree spacing is governed, practical solutions to spacing, and successes and failures of tree planting policies relating to proper spacing between trees in the Urban Environment.
2:45pm-3:15pm	**Break with Exhibitors**
3:15pm-4:00pm CEU's Available:.75	**Applying ANSI A300 Pruning Specifications & Structural Pruning Tactics** – *Aaron Schulz , Oak Bros* **Description:** Pruning is one of the most common forms of tree practices performed. If done correctly, pruning can increase a tree's longevity. If done incorrectly, pruning can severely reduce a tree's lifespan. This session will explore changes to ANSI A300 Part 1: Pruning (Standard & Best Management Practices), how to apply pruning specifications to ensure you're receiving a return on your canopy investment, and how to apply structural pruning tactics to young and mature trees alike to increase your urban forest's longevity.
	Commercial Sessions – Streamed Live
1:00pm-2:00pm CEU's Available: 1	**Alkylate -- A Safer, Smarter Fuel Solution for Your Equipment** – *James Armstrong, Aspen Fuels USA* **Description:** Alkylate fuels were originally developed in Europe to benefit tree care workers by reducing health hazards (benzene, toluene, sulfur, etc) associated with exposure to emissions from pump fuels. Alkylate Fuels like Aspen have become the industry standard in Europe as they remove the hazardous components and provide a clean-combustion for small engine equipment (i.e. chainsaws, pruning saws, trimmers, blowers, etc). This results in a safer working environment and will reduce downtime, increase productivity, and minimize equipment-related problems.
2:00pm-2:45pm CEU's Available: .75	**"Stop Paying Angi: Get More Hot Leads Online for Free"** - *Josh Bien* **Description:** Google Business Profile has become the greatest source of leads that no one is talking about. We'll go over a few simple ways to get more leads out of it, from getting more reviews to setting your service area to making posts. Come learn some simple and free ways to get more leads out of Google while generating content for Social Media as well.
2:45pm-3:15pm	**Break with Exhibitors**
3:15pm-4:00pm CEU's Available: .75	**Urban Wood Utilization Panel** – *Erika Horrigan (Moderator)* **Description: TBD**
	Utility Sessions
1:00pm-2:00pm CEU's Available: 1	**A History of Utility Vegetation Management from Telegraph to Today** – *Geoff Kempter,*, Asplundh Tree Expert, LLC, **Description**: Since the first telegraph wires were strung, there has been controversy over the methods used to maintain encroaching vegetation. This presentation provides historical examples of how these issues have been approached over the past 150 years, how science, economics, ignorance and politics have affected the debate, and a vision for the future that avoids past mistakes and allows ROWs to be managed for maximum benefit.

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2:00pm-2:45pm CEU's Available: .75	**Human and Organizational Performance (HOP) Fundamentals: A New Pathway to Safety** – *Paul Hurysz,* Davey Resource Group **Description:** One of the biggest challenges for safety leaders in our industry, and others, is to leverage the beliefs and behaviors of employees to remove variables from their work that drive employees into making poor decisions. Although, statistically speaking, safety has been improving in most industries over the years. However, fatal and serious incidents have not. That's why we are now starting to see a trend of organizations making a philosophical shift away from Behavior Based Safety (BBS) towards Human and Organizational Performance (HOP). This presentation will explain why this shift could be the key to life.
2:45pm-3:15pm	**Break with Exhibitors**
3:15pm-4:00pm CEU's Available: .75	**Animals as a Vegetation Management Solution** – *Kelvin Limbrick,* ComEd **Description:** 'Animals as a Vegetation Management Solution' - A review of how we reduce vegetative waste with the first known goat program in the Midwest and animals at our local zoos, an overview of operations, successes and challenges, media opportunities, and adorable photos of the animals!"
Time: TBD	**TREE Fund Raffle**

IAA Annual Conference & Trade Show
Wednesday, November 8th, 2023

General Sessions – Streamed Live

8:00pam-9:00am CEU's Available: 1	**Developing and Growing a Plant Healthcare Section** – *Zach Shier, Joseph Tree Care* **Description:** Creating and developing a plant healthcare section can be a challenging and often confusing process. Where do you start? What equipment do you need or want? What services should you, or can you offer? What kind of oversight do you need? All of these questions can plague tree care companies who want to offer PHC services or want to grow their existing PHC section. In this talk I'll go over how I built a PHC section from the ground up over the last 7 years, the things I would have done differently, and how I plan on growing in the future.
9:00pam-10:00am CEU's Available: 1	**Why and When to Call JULIE** – *David Van Wy,* **Description: TBD**
10:00am-10:30am	**Break with Exhibitors**
10:30am-11:15am CEU's Available: .75	**Confidence, Competence, and the Voice in My Head that Says "I Don't Know Enough"** – *Steve Ludwig,* Ludwig Speaks, LLC **Description:** Thirty years ago, I sat at this conference in awe of the knowledge of the presenters and board members of the organization. How could a new teammate like me ever aspire to the knowledge, wisdom, and confidence of our industry greats? In this session I will discuss what it takes to go from a new teammate in the industry to the ranks of the respected arborists we experience here at conference.
11:15am-12:00pm CEU's Available: .75	**Title & Speaker: TBD** **Description: TBD**
12:00pm-1:00pm	**Lunch with Exhibitors**

Municipal Sessions – Streamed Live

1:00pm-2:00pm CEU's Available: 1	**The Arc: Lifecycle Planning for Trees** – *Mike Galvin,*, SavATree **Description:** This presentation starts with planning for places where trees can be planted and where existing trees can grow, using various tree canopy assessments projects as case studies. We then look at maximizing tree service life at the site level with tools like the AirSpade and TreeRadar and concepts like critical root zone (CRZ) and structural root zone (SRZ) in tree preservation planning. Finally, we look at opportunities to sequester carbon and reuse and recycle wood in trees and buildings that are removed, and how the resulting goods can support planting efforts to complete the cycle.
2:00pm-3:00pm CEU's Available: 1	**Woodland Flooding Mitigation** – *Karl Persons* **Description:** With the Changing Climate, scientists are predicting more storms and thus more flooding in the flood plains. How do we mitigate the time that the flood plains are flooded?

Commercial Sessions

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1:00pm-2:00pm CEU's Available: 1	**Test Before You Treat** - *Zach Shier, Joseph Tree Service* **Description:** The world of nutrient testing can be difficult to navigate resulting in underutilization in tree care. Attend to learn everything you need to know about foliar and soil testing. In this presentation you'll learn: How to sample, what metrics you should use, how they are analyzed and interpreted to guide PHC treatments to make a positive impact for you and your clients.
2:00pm–3:00pmpm CEU's Available: 1	**Tree Biomechanics & Cabling: Static vs. Dynamic Support Systems** - *Chad Rigsby, The Bartlett Tree Research Laboratories* **Description:** The talk will cover the science and research behind cabling systems and discuss the pros and cons of both types of systems.
Utility Sessions	
1:00pm-2:00pm CEU's Available: 1	**Assessment of Remote Sensing Technologies for Distribution UVM** – *Nick Day, ComEd* **Description:** ComEd began remote sensing pilot projects in 2022 to assess the accuracy, practicality, and scalability of various technologies including LiDAR, hyperspectral imagery, and high-resolution satellite imagery. This presentation will provide an overview of the technologies, the pilot project, the approach to validating the data and the initial findings.
2:00pm–3:00pm CEU's Available: 1	**Targeted Herbicide Use on the Row** – *Mike Maine* **Description: TBD**
IFA Sessions	
1:00pm -2:00pm CEU's Available: 1	**Site and Soil Characteristics Driving White Oak Decline in the Chicago Region** - *Rosalind Remsen,* University of Wisconsin - Stevens Point **Description:** A review of preliminary research results from surveying sites with both declining and healthy oaks in the Chicago metro area. Soil and site characteristics were compared between these trees to investigate what site and soil characteristics may be driving oak decline of the white oak group. This research also supports collaborators' research on diseases that may be involved in the oak decline pattern.
2:00pm-3:00pm CEU's Available: 1	**Tree Risk Assessment** – *Steve Lane,* Graf Tree Care **Description:** Our planet is rapidly urbanizing, leading to increased spatial overlap between humans and wildlife. Although urban landscapes are often considered 'human spaces', we can manage urban landscapes with wildlife in mind. By studying urban wildlife ecology, behavior, and interactions with humans, we can design urban communities to support both wildlife and people.
IAA Annual Conference & Trade Show	
Tuesday Spanish Sessions – Eduardo Medina, Davey Tree Expert Co	
8:00am-9:45am	**Plant Halth Care - Salud y Cuidado De la planta**
9:45am-10:30am	**Ropes and Uses - cuerdas y usos**
10:30am-11:15am	**Presentation of Awards and Introduction of New Board Members**
11:50am-1:00pm	**Skyline - Tragaluz**
1:00pm-2:00pm	**Lunch with Exhibitors**
2:00pm-2:45pm	**Tree Risk Evaluation - Evaluacion de Riesgos**
2:45pm-3:15pm	**Break with Exhibitors**
3:15pm-4:00pm	**SRS in the Demo Tree - SRS en el arbol para demonstracion**
Tuesday November 7th, 2023 – Joseph Kramer Demonstration Tree Alex Julius, Lilly Soderlund, and Nicole Benjamin	
8:00am-9:45am	**JSSA's, Jobsite Setup and Pre-Climb Hazard Mitigation**
10:00am-10:30am	**Break with Exhibitors**
10:30am-12:00pm	**Presentation of Awards and Introduction of New Board Members**

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11:15am-11:50am	Picking Tools for the Climb- Know the Job; Know Yourself
11:50am-1:00pm	Lunch with Exhibitors
1:00pm-2:00pm	Planning Your Route; Planning Your Tree Rigging
2:00pm-2:45pm	Selections
2:45pm-3:15pm	Break with Exhibitors
3:15pm-4:00pm	Executing Your Plan
Wednesday November 8th, 2023 – Joseph Kramer Demonstration Tree Alex Julius, Lily Soderlund, and Nicole Benjamin	
8:00am-10:00am	Rigging Strategy and Rope Management
10:00am-10:30am	Break with Exhibitors
10:30am-12:00pm	Spar Work Part 1
12:00pm-1:00pm	Lunch with Exhibitors
1:30pm-3:00pm	Spar Work Part 2

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Conference Notebook (or similar TBA)

Skyline Tree Service

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Joseph Kramer Demo Area

Skyline Tree Service

Illinois Trees

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