

66th Annual Iowa State University Shade Tree Short Course

February 23-24, 2022

Scheman Building, Iowa State University
Ames, Iowa

Theme: We're Back!

Tuesday, February 22, 2022

Iowa Nursery & Landscape Association Events

(Room 275 and 299 Scheman Building)

The Iowa Nursery & Landscape Association will host a half day specifically designed for INLA members. The day will feature Iowa Certified Nursery Professional (ICNP) certification testing and a continuing education program for current ICNP's.

1:00 p.m. – 4:00 p.m.	Iowa Certified Nursery Professional (ICNP) Testing – Room 275
1:00 p.m. – 4:00 p.m.	ICNP Continuing Education – Room 299
10:00 a.m. – 4:00 p.m.	Trade Show Set-up

Become an ISA Certified Arborist

(Room 250-252 Scheman Building)

Once again in 2022, the ISU Shade Tree Short Course will host an International Society of Arboriculture Certified Arborist exam. STSC participants wishing to take the exam should register online with the ISA (<http://www.isa-arbor.com/certification/index.aspx>) or call the ISA at 888-472-8733. Enrollment deadline is February 11.

2:30 – 6:30 p.m.	ISA Certified Arborist Exam – Room 250-252
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Wednesday, February 23, 2022

7:30 – 9:00 a.m.

Registration, Refreshments, and Visit Trade Show

(First floor lobby, Scheman Building)

Opening General Session (C.Y. Stephens Auditorium)

9:00 – 9:30 a.m.

Welcome, Announcements, Special Presentations, **Donald Lewis**, Iowa State University

9:30 – 10:30 a.m.

Trees in the Urban Heat Island: Canopy and Cooling

Michael Alonzo, American University, Washington DC

10:30 – 11:30 a.m.

The Physics of Tree Failure: Windstorms

Jim Flott, Community Forestry Consultants, Inc.

11:30 a.m. – 1:00 p.m.

Lunch, Visit Trade Show, INLA Business Meeting, and IAA Business Meeting

1:00 – 2:00 p.m.

Workshop Session A

2:15 – 3:15 p.m.

Workshop Session B

3:15 – 4:00 p.m.

Break and Visit Trade Show

4:00 – 5:00 p.m.

Workshop Session C

5:00 – 7:00 p.m.

INLA Hospitality Reception

(Open to all attendees) –

Reiman Gardens

7:00 – 8:00 p.m.

Scholarship Auction/Awards Program – Reiman Gardens



Thursday, February 24, 2022 (Scheman Building)

7:30 – 8:30 a.m.

Refreshments and Visit Trade Show

8:30 – 9:30 a.m.

Workshop Session D

9:45 – 10:45 a.m.

Workshop Session E

11:00 – 12:00 (noon)

Workshop Session F

12:00 – 1:15 p.m.

Lunch (optional/Scheman Building) or on your own

Trade Show Open for Final Time!

1:15 – 2:15 p.m.

Workshop Session G

Concluding General Session (Benton Auditorium)

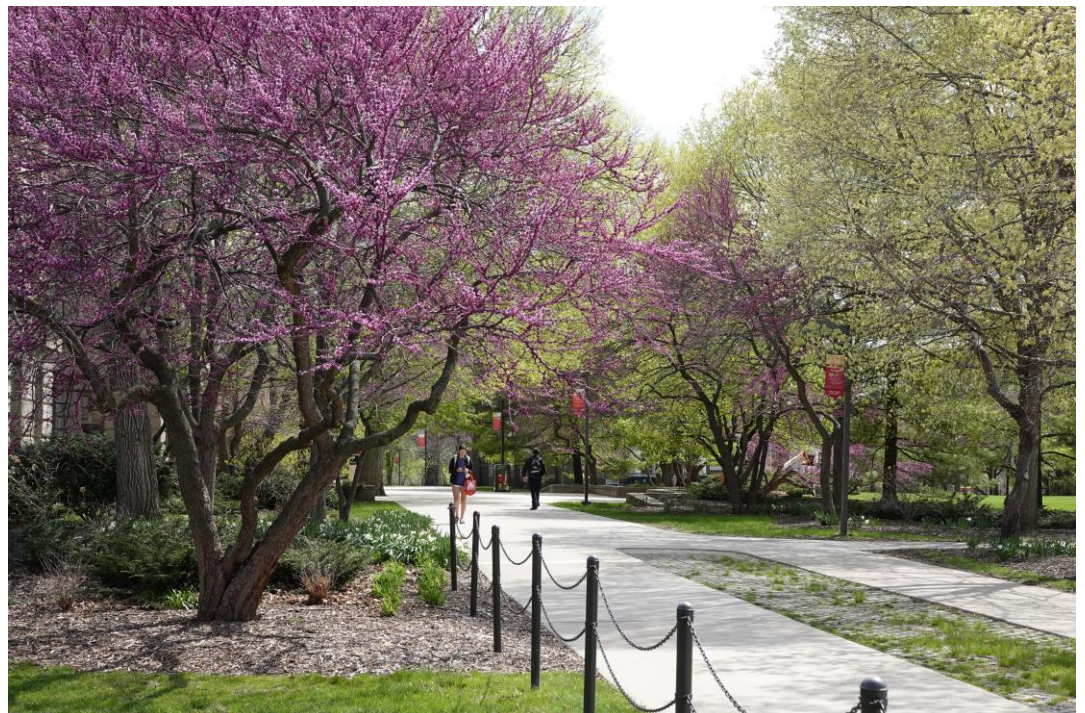
We Always Hurt the Ones We Love: Killing Our Trees with Kindness

John Ball, South Dakota State University

3:30 – 3:45 p.m.

Evaluation

Adjourn



OPENING GENERAL SESSION

Wednesday, February 23, 2022 – 9:30 a.m.

Trees in the Urban Heat Island: Canopy and Cooling

The ISU Shade Tree Short Course is pleased to welcome **Michael Alonzo**, Assistant Professor of Environmental Science at American University, Washington, DC. Previous research tells us that urban areas are 2-3 degrees warmer than neighboring rural areas because vegetation has been replaced by impervious surfaces. It is also well understood that the urban forest cools its surroundings, however, it is still an open question how tree planting site (e.g., street trees, park trees), and configuration (e.g. clumps, distributed single trees) influence the magnitude and timing of cooling. In his presentation, Dr. Alonzo will discuss recent work mapping urban air temperature, quantifying cooling from trees, and how urban trees respond to heat.

1.0 ISA CEU, A, Bs

The Physics of Tree Failure: Windstorms

With the derecho from the summer of 2020 still fresh in our minds, **Jim Flott** is here to shed some light on why some trees fail in storm events while others do not. There has been a proliferation of tree anchorage and biomechanics research in the last decade. And an understanding of this research will help us discard outdated beliefs, generalizations, anecdotal evidence, and industry myths and misinformation. Tree, root, and crown attributes, along with crown loading, weather, and tree biomechanics are factors that influence tree viability and survivability during severe windstorms. With over 45 years of experience, Jim is the perfect presenter to tackle this important topic.

1.0 ISA CEU, A, U, T, M, Bm, L

CLOSING GENERAL SESSION

Thursday, February 24, 2022 – 2:30 p.m.

We Always Hurt the Ones We Love: Killing Our Trees with Kindness

If our goal in 2022 is to reclaim a sense of normalcy in our lives, then inviting John Ball to be our closing general session presenter seemed like the right thing to do. Besides, he knows us, has mapped the fastest and most efficient way to navigate to Ames from Brookings, SD, and is never afraid to drive in a little snow. Dr. Ball's message for us this time is a pretty simple one. Don't let good intentions get in the way of sound, arboricultural practice. As professionals, we must always follow the science, setting aside practices and methodologies with no proven benefit. John's message is always appropriate, timely, and inspiring, so don't leave early this year!

1.0 ISA CEU, A, M, Bp (0.5), Bm (0.5)

Session A Workshops

A-1. (D-1 Repeat)

A Review of Wood Boring Insects and Their Management*

Whitney Cranshaw, Colorado State University

Fort Collins, CO

Many kinds of insects develop by tunneling within trunks and branches of trees and shrubs, including various kinds of beetles, moths, and an odd group of wood boring wasps. Each produces different patterns of injury to plants and their ability to cause plant damage varies widely. Being able to recognize the common wood borers, and understand the principles in their management will be the focus of this presentation.

1.0 ISA CEU, A, M, Bp

A-2. (G-1 Repeat)

Rugged Plants for a Changing Climate

Ross Shrigley, Plant Select

Fort Collins, CO

In this presentation, Executive Director of Plant Select, Ross Shrigley will describe how our changing climate requires a new approach to tree and shrub selection. Through relationships with breeders, botanic gardens, universities, and independent plant explorers, Plant Select has developed new plant materials suitable for our uncertain climate, now and in the future.

1.0 ISA CEU, A, M, Bs

A-3. (C-3 Repeat)

The Science and BMP's of Tree Planting and Establishment

Richard Hauer, University of Wisconsin - Stevens Point

Stevens Point, WI

Have you ever argued the merits of removing (or not) burlap from B&B trees during their installation in the landscape? What does the science of tree planting have to say about this topic? In this presentation, Richard Hauer will discuss findings from the first known study on the full-removal, partial-removal, and non-removal of burlap and wire baskets. In addition, workshop participants will learn about pull-testing trees as a diagnostic method for testing the effectiveness of different planting techniques. Sign up for this session and learn the steps for promoting tree establishment.

1.0 ISA CEU, A, M, Bs (0.5), Bp (0.5)

A-4. (B-4 Repeat)

Leadership from the Inside Out

Scott Jamieson, Bartlett Tree Experts

Arlington Heights, IL

Leadership is most powerful when the leader has a good understanding of how *they* think, feel, and behave. This interactive workshop will use the Enneagram as a model for exploring personality styles and the impact those have on colleagues, coworkers, and clients.

1.0 ISA CEU, A, M, Bm

A-5. (D-5 Repeat)**Diagnosing Health Problems of Woody Plants***

(2 hours) – Limit 30 per session

Laura Jesse Iles and Lina Rodriguez Salamanca, Iowa State University

Ames, IA

Mark Vitosh, Iowa DNR District Forester

Iowa City, IA

Like a comfortable pair of shoes, favorite t-shirt, or slightly worn pair of yoga pants, the trio of Jesse-Iles, Rodriguez-Salamanca, and Vitosh makes a triumphant return to the STSC in 2022, with a brand new slate of biotic and abiotic plant disorders to cover. Since our last face-to-face meeting in 2020, Laura, Lina, and Mark have scoured the countryside looking for samples and examples of woody plant problems to bring to you. This workshop promises to be an emotional reunion between three of our best diagnosticians and YOU, our valued audience. As always, sign up early if you want a seat at the table.

2.0 ISA CEU, A, Bs (1.0), Bp (1.0)

A-6. (B-6 Repeat)**Conceptual Framework for Human Drivers of Low Tree Diversity in Urban Landscapes**

Limit 50 per session

Grant Thompson, Iowa State University

Ames, IA

Despite the immense diversity of trees native to North America, only a limited number of species dominate our urban spaces and landscapes. As a result, the average community in the United States relies on just six species for the majority (61.5%) of its street and park trees. In this workshop, Dr. Thompson will describe a tree selection process that often leads to a "diversity funnel" that leaves urban forests vulnerable to threats stemming from low tree diversity.

1.0 ISA CEU, A, M, Bs (0.5), Bp (0.5)

Session B Workshops

B-1. (E-1 Repeat)**Midwest Conifer ID**

Limit 100 per session

Scott Carlson, Scott Carlson Consulting and Appraisal LLC

Eldridge, IA

Our clients often ask us to look at their "pines" or "evergreens" but often, they are neither. As professionals, we should be able to quickly identify both deciduous and coniferous trees, but some of us struggle with these basic skills. In this workshop, Scott will focus on ways to identify conifers using easy-to-remember alliterative tricks and important visual keys. And if you promise to "mute" your cell phones, Scott may even cover a few of our more exotic dwarf (garden) conifers.

1.0 ISA CEU, A, Bs (0.5), Bp (0.5)

B-2.**Recognizing and Working With Natural Enemies of Shade Tree Pests*****Whitney Cranshaw, Colorado State University****Fort Collins, CO**

All insects, including the most important pest species, are affected by many kinds of natural controls that limit their numbers. Among these controls are the natural enemies, or biological controls, including predators that hunt and consume insects and mites as prey, parasitoids that live within and ultimately kill their insect host, and some pathogens that may cause spectacular outbreaks of disease. A key component of arboriculture IPM is recognizing natural enemies and learning ways to work with them instead of against them. Sign up for this workshop to learn more.

1.0 ISA CEU, A, Bs (0.5), Bp (0.5)**B-3. (F-6 Repeat)****Woody Plant Propagation: Secrets Revealed****Scott Skogerboe, Fort Collins Wholesale Nursery****Fort Collins, CO**

Sign up for this workshop and learn a few tricks of the trade from a veteran plant propagator. With 30 years of experience, Scott will cover the topics of collecting, propagating, and care of woody plants.

B-6.**Conceptual Framework for Human Drivers of Low Tree Diversity in Urban Landscapes***(See description A-6)***1.0 ISA CEU, A, M, Bs (0.5), Bp (0.5)****B-7. (F-7 Repeat)****A Holistic Approach to Managing Cool-season Turfgrass in Iowa (Category 3OT)****Limit 50 per session***Evan Alderman, Iowa State University****Ames, IA**

In the world of turfgrass management, how is everything connected? How can fertility impact pest prevention? How can species selection effect aesthetic goals? In this workshop, Evan will describe how various inputs are connected and interrelated when managing cool-season turfgrasses in Iowa. To receive recertification credit in category 3OT (Ornamentals and Turf) at the ISU Shade Tree Short Course, an applicator must attend Workshop C-6 or G-6 (*Continuing Instructional Course for Pesticide Applicators*) PLUS Workshop B-7 or F-7 (*A Holistic Approach to Managing Cool-season Turfgrass in Iowa*) PLUS one additional pest-management approved workshop as designated by an asterisk (*). **No ISA CEU's available**

Session C Workshops

C-1. (F-1 Repeat)

The Great Borer War*

Guy Sternberg, Starhill Forest Arboretum

Petersburg, IL

The Midwest has joined many other regions in combating the emerald ash borer, and our victories thus far have been overwhelmed by our losses. But if you need a reason for hope, here's a true story for you, complete with a "how-to" for those of you interested in blazing the same trail. This is an inspiring story from one of our most popular presenters. Welcome back to the STSC Guy!

1.0 ISA CEU, A, M, Bp (0.5), Bm (0.5)

C-2. (E-6 Repeat)

The Plant Select Program: Shaping Successful Customers

Ross Shrigley, Plant Select

Fort Collins, CO

Plant Select is a non-profit new plant introduction program in collaboration with Colorado State University, Denver Botanic Gardens, and the green industry. Participating Plant Select members benefit from website resources, signage, and branding about resilient plants for our changing climate. The Plant Select community is a nexus of growers, retailers, municipalities, public gardens, and landscape professionals working together toward a sustainable future.

1.0 ISA CEU, A, M, Bs

C-3.

The Science and BMP's of Tree Planting and Establishment

(See description A-3)

1.0 ISA CEU, A, M, Bs (0.5), Bp (0.5)

C-4. (D-4 Repeat)

Changing the Status Quo: Take Risks, Step Outside the Box, and Improve Your Organization's Culture

Natalie McNeill, Davey Tree Expert Company

Fort Collins, CO

Why did we (you) decide to pursue a career in arboriculture and urban forestry? And maybe the why doesn't matter as much as the reason(s) we stay in the tree care industry. Could it be that we just love trees? But how do we take the passion and concern we have for protecting trees and relate that to leadership within our organizations? In this workshop Natalie will share her experiences and journey in shaping, changing, and ultimately improving the culture within her own business office.

1.0 ISA CEU, A, M, Bm

C-6. (G-6 Repeat)**Continuing Instructional Course for Pesticide Applicators****

Limit 50 per session

Evan Alderman, Iowa State University

Ames, IA

This workshop is required if you want approved continuing instructional credits (CIC's) toward pesticide applicator recertification at the 2022 STSC. The Iowa Department of Agriculture and Land Stewardship has approved the Iowa State University Shade Tree Short Course for CIC's in categories 2, 3O, and 3OT. This required session will present information on pesticide use and the environment, pesticide labels and comprehension (including restricted entry intervals and pre-harvest intervals), as well as other relevant required topics. You also **must** attend one additional qualifying workshop (A-1 or D-1, A-5 or D-5, B-2, C-1 or F-1, E-4, or F-5 or G-5) to receive certification. If you are recertifying for category 3OT, you also must attend the turfgrass management workshop (B-7 or F-7).

1.0 ISA CEU, A, Bp (0.5), Bm (0.5)

NOTE: Pesticide applicators wishing to recertify at the STSC will be charged an additional **\$35** for categories 2, 3O, or 3OT (see registration form).

C-7. (D-7 Repeat)**Forged in Fire: Arborists Options Before and After the Fire**

Limit 50 per session

Jim Flott, Community Forestry Consultants, Inc.

Spokane, WA

In this workshop, Jim will discuss the wildland-urban interface where the natural environment and human community overlap and how you might go about helping clients living there with a fire prevention and risk reduction plan. Participants will learn about services they can offer before and after a fire. These kinds of services are not typically expected of our industry, but demand for them may increase with increasing risk of drought and fire.

1.0 ISA CEU, A, M, Bm



Session D Workshops

D-1.

A Review of Wood Boring Insects and Their Management*

(See description A-1)

1.0 ISA CEU, A, M, Bp

D-2. (E-2 Repeat)

Driving Across Railroad Crossings - Stop, Watch, Listen, Stay Alive

Fred Whitford, Purdue University

West Lafayette, IN

Three hundred million vehicles will cross the more than 200,000 public railroad crossings each day. This means most of us will drive across one or more railroad crossings every day but we do so with little thought of what takes place as trucks and trains share these busy intersections. In this presentation, Fred will provide applicators with the tools needed to ensure that pesticides in their possession are not accidentally spilled or released as a result of a close encounter at railroad crossings.

No ISA CEU's available

D-3. (F-3 Repeat)

Proper Tree Pruning: Just What Does the A300 Part 1 Tell Us?

Richard Hauer, University of Wisconsin - Stevens Point

Stevens Point, WI

What can science, standards, and best management practices tell us about tree pruning? What exactly is natural tree pruning and how does it differ from other forms of pruning? How do you decide between reduction pruning and branch removal? How does a heading cut differ from the practice of topping? Can tree canopies be restored through pruning? And finally, is reducing tree height a good way to compensate for decay? Richard will answer these questions and more during this informative session.

1.0 ISA CEU, A, U, T, M, Bp (0.5), Bm (0.5), L

D-4.

Changing the Status Quo: Take Risks, Step Outside the Box, and Improve Your Organization's Culture

(See description C-4)

1.0 ISA CEU, A, M, Bm

D-5.

Diagnosing Health Problems of Woody Plants*

(See description A-5)

2.0 ISA CEU, A, Bs (1.0), Bp (1.0)

D-7.

Forged in Fire: Arborists Options Before and After the Fire

(See description C-7)

1.0 ISA CEU, A, M, Bm

Session E Workshops

E-1.

Midwest Conifer ID

(See description B-1)

1.0 ISA CEU, A, Bs (0.5), Bp (0.5)

E-2.

Driving Across Railroad Crossings - Stop, Watch, Listen, Stay Alive

(See description D-2)

No ISA CEU's available

E-3. (G-3 Repeat)

Chchchanges...The Past 50 Years of Tree Care and What's to Come

Gary Johnson, University of Minnesota

St. Paul, MN

As a starting point, Gary will reflect back on his very first ISU Shade Tree Short Course in 1970, walking in the door as a self-described long-haired, bearded, graduate student. Well, Professor Emeritus Johnson has certainly come a long way and so has the profession of arboriculture and urban forestry. In what promises to be a most entertaining session, Gary will address the way we define and process tree care, professionalism, and urban forestry, and acknowledge those who guided us along the way.

1.0 ISA CEU, A, M, Bm

E-4.

Understanding How Characteristics of Insecticides Affect Use Patterns and Performance*

Whitney Cranshaw, Colorado State University

Fort Collins, CO

There are dozens of insecticides available to help manage problems with insects and mites on shade trees and shrubs, and each of these products vary in their chemistry and formulation. Some products control a broad spectrum of insects while others have a much narrower range. In this session, Dr. Cranshaw will provide a brief overview of key chemical and biological characteristics of insecticides commonly used to manage insects on turfgrass and landscape plants.

1.0 ISA CEU, A, Bp

E-6.

The Plant Select Program: Shaping Successful Customers

(See description C-2)

1.0 ISA CEU, A, M, Bs

Session F Workshops

F-1.

The Great Borer War*

(See description C-1)

1.0 ISA CEU, A, M, Bp (0.5), Bm (0.5)

F-2. (G-2 Repeat)

What We Can Learn From Truck and Equipment Highway Crashes

Fred Whitford, Purdue University

West Lafayette, IN

Just because someone else is at fault doesn't necessarily mean you are absolved from liability. Sign up for this session and learn how lawyers and the courts work when it comes to highway accidents involving spray application equipment and pesticides transported on the highway. Participants also will learn why keeping trucks and trailers repaired and keeping track of maintenance records is so important in protecting drivers and the company.

1.0 ISA CEU, A, M, Bm

F-3.

Proper Tree Pruning: Just What Does the A300 Part 1 Tell Us?

(See description D-3)

1.0 ISA CEU, A, U, T, M, Bp (0.5), Bm (0.5)

F-4. (G-4 Repeat)

Tree Inventory vs. Canopy Assessment

Elizabeth Schulte, PlanIT Geo

Arvada, CO

The distinction between tree inventories and tree canopy assessments can be confusing. Both are tools for collecting comprehensive information about an urban forest, however, the insights they offer are very different. In this workshop, Elizabeth will provide a foundational overview of both tools and demonstrate how each can be used for urban forest planning and management.

1.0 ISA CEU, A, M, Bm

F-5. (G-5 Repeat)

The Hemp Bandwagon*

Robin Praisner, Iowa Department of Agriculture & Land Stewardship

Ankeny, IA

Have you ever been tempted to leave the world of landscape plants behind and jump on the supposedly-lucrative hemp bandwagon? Do you need background on what hemp is...and isn't, the licensing process, rules overview, and most importantly, the market for hemp? If so, then this is the session for you. And if she has time, Robin will also provide updates on gypsy moth, emerald ash borer, spotted lanternfly, and giant Asian hornet.

1.0 ISA CEU, A, Bs (0.5), Bp (0.5)

F-6.

Woody Plant Propagation: Secrets Revealed

(See description B-3)

F.7

A Holistic Approach to Managing Cool-season Turfgrass in Iowa*

(See description B-7)

No ISA CEU's available

Session G Workshops

G-1.

Rugged Plants for a Changing Climate

(See description A-2)

1.0 ISA CEU, A, M, Bs

G-2.

What We Can Learn From Truck and Equipment Highway Crashes

(See description F-2)

1.0 ISA CEU, A, M, Bm

G-3.

Chchchanges...The Past 50 Years of Tree Care and What's to Come

(See description E-3)

1.0 ISA CEU, A, M, Bm

G-4.

Tree Inventory vs. Canopy Assessment

(See description F-4)

1.0 ISA CEU, A, M, Bm

G-5.

The Hemp Bandwagon*

(See description F-5)

1.0 ISA CEU, A, Bs (0.5), Bp (0.5)

G-6.

Continuing Instructional Course for Pesticide Applicators**

(See description C-6)

1.0 ISA CEU, A, Bp (0.5), Bm (0.5)

*Qualifying Pesticide Applicator Workshops

**Required Pesticide Applicator Workshop

Pesticide Continuing Education

The Iowa Pesticide Act provides two options for renewing commercial pesticide applicator certification. Commercial and public applicators may choose to renew their certification by testing once every three years or by attending approved instructional training each year.

Recertification by training requires participation in two hours of approved instructional training each year, in each category in which an applicator is certified. Some programs may be approved for more than one category and simultaneous credit hours are possible. Applicators will not be allowed to make up hours that they missed in a previous year, nor will they be allowed to carry forward excess credit hours.

To Recertify in Category

2 or 3O

Applicator Must Attend

Workshop C-6 or G-6

PLUS

One other “Pest
Management” workshop

3OT

Workshop C-6 or G-6

PLUS

Workshop B-7 or F-7

PLUS

One other “Pest
Management” workshop

Pest Management Workshops:

- | | |
|------------|---|
| A-1 or D-1 | A Review of Wood Boring Insects and Their Management (<i>Cranshaw</i>) |
| A-5 or D-5 | Diagnosing Health Problems of Woody Plants
(<i>Iles, Rodriguez-Salamanca, and Vitosh</i>) |
| B-2 | Recognizing and Working With Natural Enemies of Shade Tree Pests (<i>Cranshaw</i>) |
| B-7 or F-7 | A Holistic Approach to Managing Cool-season Turfgrass in Iowa (<i>Alderman</i>) |
| C-1 or F-1 | The Great Borer War (<i>Sternberg</i>) |
| E-4 | Understanding How Characteristics of Insecticides Affect Use Patterns and Performance (<i>Cranshaw</i>) |
| F-5 or G-5 | The Hemp Bandwagon (<i>Pruisner</i>) |

For every workshop session A through G, mark your first (1) through seventh (7) choice in the spaces provided.

Session A Workshops

- ___ **A-1 A Review of Wood Boring Insects and Their Management***
- ___ **A-2 Rugged Plants for a Changing Climate**
- ___ **A-3 The Science and BMP's of Tree Planting and Establishment**
- ___ **A-4 Leadership from the Inside Out**
- ___ **A-5 Diagnosing Health Problems of Woody Plants***
2 HOURS/LIMIT 30 PER SESSION
- ___ **A-6 Conceptual Framework for Human Drivers of Low Tree Diversity in Urban Landscapes**

Session B Workshops

- ___ **B-1 Midwest Conifer ID**
- ___ **B-2 Recognizing and Working With Natural Enemies of Shade Tree Pests***
- ___ **B-3 Life below Ground - Chlorosis**
- ___ **B-4 Leadership from the Inside Out**
- ___ **B-6 Conceptual Framework for Human Drivers of Low Tree Diversity in Urban Landscapes**
- ___ **B-7 A Holistic Approach to Managing Cool-season Turfgrass in Iowa***

Session C Workshops

- ___ **C-1 The Great Borer War***
- ___ **C-2 The Plant Select Program: Shaping Successful Customers**
- ___ **C-3 The Science and BMP's of Tree Planting and Establishment**
- ___ **C-4 Changing the Status Quo: Take Risks, Step Outside the Box, and Improve Your Organization's Culture**
- ___ **C-5 Life below Ground - Chlorosis**
- ___ **C-6 Continuing Instructional Course for Pesticide Applicators****
LIMIT 50 PER SESSION
- ___ **C-7 Forged in Fire: Arborists Options Before and After the Fire**

Session D Workshops

- ___ **D-1 A Review of Wood Boring Insects and Their Management***
- ___ **D-2 Driving Across Railroad Crossings - Stop, Watch, Listen, Stay Alive**
- ___ **D-3 Proper Tree Pruning: Just What Does the A300 Part 1 Tell Us?**
- ___ **D-4 Changing the Status Quo: Take Risks, Step Outside the Box, and Improve Your Organization's Culture**
- ___ **D-5 Diagnosing Health Problems of Woody Plants***
2 HOURS/LIMIT 30 PER SESSION
- ___ **D-6 Life below Ground - Stem Girdling Roots**
- ___ **D-7 Forged in Fire: Arborists Options Before and After Fire**

Session E Workshops

- ___ E-1 Midwest Conifer ID
- ___ E-2 Driving Across Railroad Crossings - Stop, Watch, Listen, Stay Alive
- ___ E-3 Chhchchanges...The Past 50 Years of Tree Care and What's to Come
- ___ E-4 Understanding How Characteristics of Insecticides Affect Use Patterns and Performance*
- ___ E-6 The Plant Select Program: Shaping Successful Customers

Session F Workshops

- ___ F-1 The Great Borer War*
- ___ F-2 What We Can Learn From Truck and Equipment Highway Crashes
- ___ F-3 Proper Tree Pruning: Just What Does the A300 Part 1 Tell Us?
- ___ F-4 Tree Inventory vs. Canopy Assessment
- ___ F-5 The Hemp Bandwagon*
- ___ F-6 Life below Ground - Stem Girdling Roots
- ___ F-7 A Holistic Approach to Managing Cool-season Turfgrass in Iowa*

Session G Workshops

- ___ G-1 Rugged Plants for a Changing Climate
- ___ G-2 What Can We Learn From Truck and Equipment Highway Crashes
- ___ G-3 Chhchchanges...The Past 50 Years of Tree Care and What's to Come
- ___ G-4 Tree Inventory vs. Canopy Assessment
- ___ G-5 The Hemp Bandwagon*
- ___ G-6 Continuing Instructional Course for Pesticide Applicators**
LIMIT 50 PER SESSION

*QUALIFYING PESTICIDE APPLICATOR WORKSHOPS

**REQUIRED PESTICIDE APPLICATOR WORKSHOP

