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
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)
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)

Life below Ground - Chlorosis
Kent Honl, Rainbow Tree Care
Minnetonka, MN
The problem with chlorosis in landscape trees is that it's persistent and difficult to treat with reliable results. Red maple and river birch in particular top the list of commonly seen chlorotic trees in Iowa. This workshop will look at distinctions between treating chlorosis in both species while placing the greatest emphasis on the importance of healthy root systems.
1.0 ISA CEU, A, Bp

Leadership from the Inside Out
(See description A-4)
1.0 ISA CEU, A, M, Bm

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)

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-5. - CANCELLED
Life below Ground - Chlorosis
*(See description B-3)*
1.0 ISA CEU, A, Bp

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-6. (F-6 Repeat) - CANCELLED
Life below Ground - Stem Girdling Roots
Kent Honl, Rainbow Treecare
Minnetonka, MN
Almost any tree grown in a nursery and planted by humans can end up with stem girdling roots. Proper care at planting can prevent the problem, but most of the time we are trying to save trees that were planted long ago. How many SGR's can you remove? When is it too late? The work of Dr. Ed Gilman provides some clear and useful guidelines for dealing with stem girdling roots and in this session, Kent will show participants how to apply Gilman's model to help trees with SGR's.
1.0 ISA CEU, A, M, Bs (0.5), Bp (0.5)

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)
Chchchchanges...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
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 Pruisner, 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. - CANCELLED
Life below Ground - Stem Girdling Roots
(See description D-6)
1.0 ISA CEU, A, M, Bs (0.5), Bp (0.5)
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.
Chchchchanges…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 30  

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Pest Management Workshops:

A-1 or D-1  

A Review of Wood Boring Insects and Their Management (*Cranshaw*)

A-5 or D-5  

Diagnosing Health Problems of Woody Plants  
(*Iles, Rodriguez-Salamanca, and Vitosh*)

B-2  

Recognizing and Working With Natural Enemies of Shade Tree Pests (*Cranshaw*)

B-7 or F-7  

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

C-1 or F-1  

The Great Borer War (*Sternberg*)

E-4  

Understanding How Characteristics of Insecticides Affect Use Patterns and Performance (*Cranshaw*)

F-5 or G-5  

The Hemp Bandwagon (*Pruisner*)

*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  Chchchchanges…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
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  ___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