

Nursery, Landscape and  
Christmas Tree Research  
Projects and Educational Programs

December 2003



# Note from the editors



Diane Brown-Rytlewski



Jill O'Donnell

How do you make a good publication even better? This year, the Christmas Tree AOE and the Nursery and Landscape subgroup of the Ornamentals AOE have joined forces to bring you an information-packed publication. We share a number of common issues, and quite a few growers produce both nursery stock and Christmas trees, so it made sense to address both groups with a shared publication, *Nursery, Landscape and Christmas Tree Research Projects and Educational Programs*. In these pages a wide range of topics are covered including: nursery production and production systems; evaluation of

new pesticides; plant evaluation; plant disease detection and management; insect biology and management; educational programs; and human resource management. Emerald ash borer research is underway –many of the researchers have completed their first full year of data collection, and are still analyzing results; several EAB research projects are reported on here. We have a record number of articles contributed – 43 in all. We continue to have industry support and industry cooperators for many of these projects.

In these times of lean budgets, we were fortunate to get funding for this publication through our respective Area of Expertise (AOE) teams, and a \$4,000 mini-grant proposal provided to the AOE's through Michigan State University Extension; thank you! To all those who shared information about their research projects and educational programs, we appreciate your time and efforts; names of contributors are listed within the reports. Thanks to Becca Lamb for layout design and Joy Landis for assistance with publication production. Thanks to Ken Fettig for assistance with publishing. Finally, we wish to acknowledge the important contributions of our organizational partners in this endeavor: Michigan State University Extension; the Ornamentals AOE team; the Christmas Tree AOE team; MSU Ag Experiment Stations; Project GREEN; Michigan Nursery and Landscape Association; Michigan Christmas Tree Association; and Michigan Green Industry Association for publishing support and help with distribution of this publication to industry. Without the support of our industry organizations, this publication would not exist.

## Photo credits:

### Cover

Removing Fraser fir cone buds, Fraser fir with heavy cone production, planting ash alternative species-Bert Cregg; Emerald ash borer larvae- Gary Heilig; methyl bromide alternatives trial plots, GREEN sign- Diane Brown-Rytlewski

### Color insert, page 1

Flowering shrubs and herbaceous perennials survey-Kevin Brothers  
Volunteers planting ash replacement species- Bert Cregg  
Volunteers learning to identify Emerald Ash Borer- Gary Heilig  
IR-4 research plots, methyl bromide alternatives research plots- Diane Brown-Rytlewski

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Phytophthora root rot on Rhododendron, rot on apple- Gerry Adams  
Phytophthora root rot, Fraser fir- Dennis Fulbright  
Sudden Oak Death symptoms- Gerry Adams

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Precocious cone production, removing cone buds by hand- Bert Cregg  
Needle loss ratings- Gary Chastagner  
Measurement of height growth, shearing treatment- Jill O'Donnell

### Page 4

Emerald ash borer adult and larva- Dave Cappaert  
Beech scale, *Entomophaga*- infected gypsy moth larvae, jack pine budworm, pine shoot beetle adult and damage, ash tree infested with EAB- Deb McCullough

Dear Industry Partners:

On behalf of the MSU Extension Ornamentals Area of Expertise Team, I am pleased to share with you this year's summary of Nursery, Landscape and Christmas Tree Research Projects and Education Programs. An exciting development in this year's summary is the addition of research and education programs related to Christmas tree production. With support of a grant proposal developed by Diane Brown-Rytlewski and MSU Christmas Tree Extension Agent Jill O'Donnell, MSU Extension provided additional funds for development and publication of this summary. This partnership recognizes the close alliance between Michigan's landscape, nursery and Christmas tree industries as well as the close relationship among those of use conducting research and extension programs related to nursery and Christmas tree issues. On behalf of all the contributors to this edition, I thank Diane Brown-Rytlewski and Jill O'Donnell for their efforts in successfully competing for the MAES grant and compiling and editing articles in this edition.

As the state of Michigan continues to weather the economic storm, we appreciate, more than ever, the partnerships with our allied industries that make the research and education programs presented here possible. Michigan's nursery, landscape, and Christmas tree industries have remained strong through much of the recent economic downturn. To maintain this competitive position we need to maintain nationally -recognized research and extension programs. Most, if not all, of the research and education programs described here would not be possible without the support of our industry partners. The continued support from our industries will be critical for us to maintain the high level of research and outreach programming our clients expect as state funding for the Michigan Agricultural Experiment Station and Cooperative Extension come under increased scrutiny. We look forward to continuing to work with you to improve the competitiveness of Michigan's nursery, landscape, and Christmas industries and protect Michigan's environment.

Best regards,

Bert Cregg  
Campus Chair, Extension Ornamental Area of Expertise Team  
and Assistant Professor, Departments of Horticulture and Forestry

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Dear Industry Partners:

The Christmas Tree Area of Expertise Team is pleased to be given the opportunity to have our research and educational programs highlighted in this publication. The research and programs summarized in our portion of this report are a result of the priorities set by our industry partnering group. This group is comprised of Christmas tree growers of all sizes and from every part of Michigan. Our hope is that the research and programs highlighted here will help you to meet the many production, environmental, financial and marketing challenges faced by the Michigan Christmas tree industry. This work was made possible by the support of the Christmas tree industry, the Agricultural Experiment Station, Project GREEN and the Michigan State University Cooperative Extension Service. Thank you for your continuing support.

Sincerely,

Norman L. Myers  
Field Co-Chair, Christmas Tree Area of Expertise

## Introduction

On behalf of our Green Industry partners, I'm pleased to bring you the fourth edition of this publication. Featuring the research and Extension projects from personnel and field staff in the College of Agriculture and Natural Resources at Michigan State University, this publication provides information and techniques to deal with the issues and problems we're facing in the Green Industry. We've teamed up this year with the Christmas Tree segment to bring you an even more comprehensive trade tool. Our appreciation goes to Diane Brown-Rytlewski, Jill O'Donnell and the contributors for making this publication possible.

Sincerely,

Amy Frankmann  
Executive Director  
Michigan Nursery and Landscape Association

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The board of directors and the many members of the Michigan Christmas Tree Association are pleased to be involved with this important publication. Research and educational programs are our highest priority. We highly value our relationship with the College of Agriculture and Natural Resources at Michigan State University.

The information presented in this report is critical to the success and profitability of Michigan's Christmas tree industry and reflects on the talented researchers and Extension personnel at Michigan State University.

Our most sincere thanks to everyone involved in the creation of this publication, and for their continued support of Michigan's Christmas tree growers.

Sincerely,

Marsha J. Gray  
Executive Directory  
Michigan Christmas Tree Association

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