Significance to the Horticulture Industry

Brown Patch

Evaluation of a Fungicide Application as Influenced by Spray Nozzles for Rhizoctonia Blight Management in Cool-Season Turfgrass Lawns. Edward Nangle, Tyler Morris, Michael Fidanza, Gary Nolan, Michael Nairn, and Daniel Brey. *Journal of Environmental Horticulture* 41(2):40–47

Residential (i.e. home) lawns represent an environment that is beneficial to soil quality, water filtration, mental health, and surface cooling amongst other ecosystem services on a daily basis. Turfgrass comprises a vast majority of these lawns, and if managed in a responsible and sustainable manner, these spaces can have a positive impact on both the environment and society. In an attempt to reduce maintenance requirements and inputs, breeding of more sustainable turfgrass species has led to the development of turfgrass cultivars with lower requirements for water and nitrogen. These advances are not a complete solution, however, because plant disease-causing fungal pathogens continue to persist, especially within current global climate conditions. Rhizoctonia blight (*Rhizoctonia solani* Kühn) is a major disease of tall fescue [*Schedonorus arundinaceus* (Schreb.) Dumort] lawns. A single targeted fungicide application for preventive or curative Rhizoctonia blight management in tall fescue lawns would be a sustainable way to reduce and optimize resource inputs. A liquid fungicide application can be delivered effectively through spray nozzles that produce a flat-fan spray pattern of coarse to extremely coarse droplet sizes. Also, the potential for spray drift can be significantly reduced with air induction spray nozzles that produce a very coarse droplet size.

Economic Contributions Arboriculture

Understanding the Economic Contributions of the Arboriculture and Commercial Urban Forestry Sector in New England. Daniel A. Lass and Richard W. Harper. *Journal of Environmental Horticulture* 41(2):48–58

This research investigated the economic contributions of the arboriculture/commercial urban forestry (ACUF) industry through a survey that was administered to practitioners – arborists and commercial urban foresters – throughout the New England states (Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, Maine). Economic contribution analysis of this segment of the broader "green industry" enables stakeholders and interested parties to educate legislators, regulatory decision-makers, and others about the importance of the arboriculture/commercial urban forestry sector. Organizations that include land-grant universities and professional associations may use findings from this research to validate and inform training and research opportunities.

Hickory Growth

Nursery Production Method Influences Growth of Hickories. Brandon M. Miller and Nina L. Bassuk. *Journal of Environmental Horticulture* 41(2):59–64

Hickories have long been desired for use in ornamental horticulture yet are seldom produced in the nursery trade. Claims of slow shoot development and poor transplant success are the most common purported reasons why these plants are not more broadly cultivated. However, little evidence has been published to support these claims. We evaluated vegetative growth responses of four different *Carya* species at different production intervals when field-grown, above-ground container-grown, or cultivated in above-ground bags. The results indicated that not all hickory species grow at the same rate and no single production method was better than the others for each of the species studied. However, we suggest growers strongly consider adopting bitternut hickory [*Carya cordiformis* (Wangenh.) K. Koch] and kingnut hickory [*C. laciniosa* (F. Michx.) Loudon] into production for what appear to be accelerated rates of growth relative to their congeners. In addition, the above-ground bag production system was generally better suited to maximizing vegetative growth of these two species. Prior to adopting these crops, growers should consider the apparent supplemental nickel requirements of some hickories when cultivated in containers.

Homeowner Fertilizer Use

Excessive Use of Water and Fertilizer by Homeowners: Why It Happens, How It Affects the Environment, and How the Nursery Industry and Extension Outreach Can Help. Linda Chalker-Scott. *Journal of Environmental Horticulture* 41(2):65–73

This comprehensive literature review represents an analysis of homeowner beliefs and practices associated with the use of water and fertilizer in residential landscapes. The information derived from this analysis can help the landscape and nursery industries in providing science-based information to help their clients achieve their landscape goals while conserving resources and protecting the urban environment.

Weed Control

Weed Control Efficacy and Ornamental Plant Tolerance to Dimethenamid–p + Pendimethalin Granular Herbicide. J. S. Aulakh. *Journal of Environmental Horticulture* 41(2):74–79

Dimethenamid–p (0.75%) + pendimethalin (1%) granular herbicide provides two modes of action, a microtubule inhibitor (pendimethalin) and a long-chain fatty acid inhibitor (dimethenamid–p), for a broad spectrum weed control in ornamental plants. An herbicide with two modes of action would also reduce the chances of herbicide resistance evolution in weeds. The maximum single application rate for dimethenamid–p + pendimethalin granular herbicide is 3.92 kg ai·ha^{-1} (3.50 lb ai·A^{-1}). In the current study, grassy and broadleaf weeds were controlled >80% for up to 8 wk with 2.94 kg ai·ha^{-1} (2.62 lb ai·A^{-1}) of dimethenamid–p + pendimethalin. The higher rates of ≥ 5.88 kg ai·ha^{-1} (≥ 5.25 lb ai·A^{-1}) were more effective with 94% to 99% control of the tested weed species but were not safe on every ornamental species tested. The 5.88 kg ai·ha^{-1} (5.25 lb ai·A^{-1}), and 11.77 kg ai·ha^{-1} (10.5 lb ai·A^{-1}) rates are above the maximum labeled rates. These rates were adopted from a previous IR-4 crop safety protocol for ornamental plant species used in this study. The ornamental plant tolerance also varied with the experimental year and the species tested. For leucothoe var. 'Rainbow', dimethenamid–p + pendimethalin did not cause injury at rates up to 11.77 kg ai·ha^{-1} (10.5 lb ai·A^{-1}). Chocolate flower was injured only in one of the two study years. However, the injury levels were within the commercially acceptable limits with dimethenamid–p + pendimethalin rates of 2.94 kg ai·ha^{-1} (2.62 lb ai·A^{-1}) and 5.88 kg ai·ha^{-1} (5.25 lb ai·A^{-1}). Pygmyweed var. 'Red Carpet' was severely injured by dimethenamid–p + pendimethalin at rates >2.94 kg ai.ha^{-1} (2.62 lb ai.A^{-1}). Therefore, dimethenamid–p + pendimethalin granular herbicide is not recommended for use in pygmyweed var. 'Red Carpet'.

The Journal of Environmental Horticulture (ISSN 0738-2898) is published online quarterly in March, June, September, and December.