

HLA Happenings

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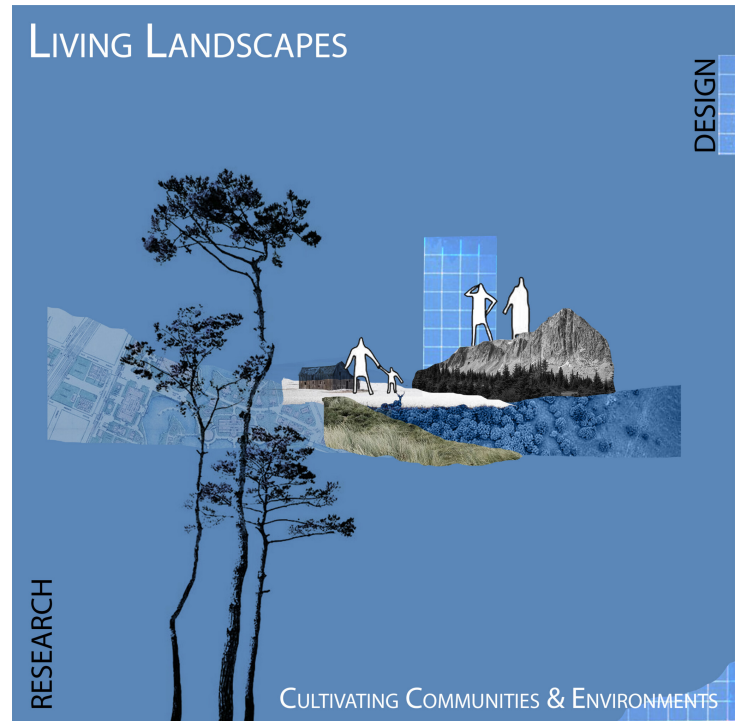
landscape installations across campus on November 16. Six groups of students installed sod, landscape plants, and mulched beds throughout the morning. Special thanks to Phil Richie and Brooke Sammons, Purdue Grounds, for their cooperation in allowing students the opportunity to gain hands-on experiences. More photos of the students' work can be viewed in this [gallery](#).

HORT 317 Gains Hands-On Experience with Purdue Grounds



The **Landscape Contracting and Management class (HORT 317)** had the opportunity to work with Purdue Grounds on six

Living Landscapes Podcast Explores Community Planning in Action with National Park Service Expert



Living Landscapes Podcast Explores Community Planning in Action with National Park Service Expert

WEST LAFAYETTE, IN (November 22, 2024) – The Living Landscapes podcast, produced by student staff at the Purdue University Center for Community & Environmental Design (CCED), releases its second episode today, focusing on the vital role of community planning in creating vibrant and sustainable public spaces.

In this episode, host Grace Lentz sits down with Ashley Newson, a Community Planner with the National Park Service's Rivers, Trails,

and Conservation Assistance Program. Newson shares her expertise and experiences in collaborative planning processes, highlighting the importance of community engagement in shaping our shared landscapes.

“At the core of Ashley’s work, it’s all about the people and communities she serves,” says Grace.

The Rivers, Trails, and Conservation Assistance program helps communities plan parks, trails, greenways, rivers, and open spaces. The program provides planning assistance and technical expertise to community groups, non-profits, tribes, and state and local governments.

This episode of Living Landscapes will explore:

- The role of the National Park Service in community planning
- How the Rivers, Trails, and Conservation Assistance Program supports local projects
- The importance of community engagement in the planning process
- Real-world examples of successful community planning initiatives

Living Landscapes is available on Podbean <https://tinyurl.com/TheLivingLandscapesPodcast>.

For more information about the Living Landscapes podcast, expressions of interest to work with us, or to learn more about opportunities to partner with the CCED to enhance your community, visit <https://www.purdue.edu/hla/sites/thompsonlab/> or contact Dr. Aaron Thompson (awthomps@purdue.edu).

This Week at the Purdue Student Farm



FINAL CSA OF THE YEAR! It’s a balmy 32 degrees Fahrenheit, and the snow is falling at a nice semi-horizontal angle; as you may

have guessed, we’re living the dream this fine Thursday afternoon. The bin washer is soon to begin its winter state at Meigs, where it can reside safe and sound in an above-freezing enclosure, but in the meantime, it’s stored in the barn where it is currently still warm enough. The Small Farm Experience class removed all of the clips and trellising from the tomatoes over the course of their class, so those will be next out of the ground. Chris and I prepped next year’s ginger in the greenhouse earlier this week, as well. While we’ve still got some odds and ends growing in the tunnels, we’ll be finishing up the final CSA harvest this afternoon and tomorrow morning. Feels a little bittersweet, if I’m entirely honest. It’s been a joy to get to write each week, and to see folks throughout the season – for a good number of you, I’ve been running into you guys for over 2 years now (though I haven’t been at pickup as much recently). Interactions with you all have been an ongoing highlight of my time at the Farm, and it’s one of the things I’ll miss most with the end of the year.

Many thanks to everyone,

Nellie Walthery

Chris Adair: I wanted to thank everyone for making the program what it has become today, it feels like we just started yesterday(2020), feeling a bit like we(I) were flailing in the dark but with all your support and enthusiasm we have now grown to over 150 participants! Your participation allows us to hire many students for work at the farm which allows them to get an in-depth hands-on learning experience and has allowed them to take over more and more of the farming activities, especially things like this email. We could not run the farm without your support so thank you again and we look forward to seeing folks next season!

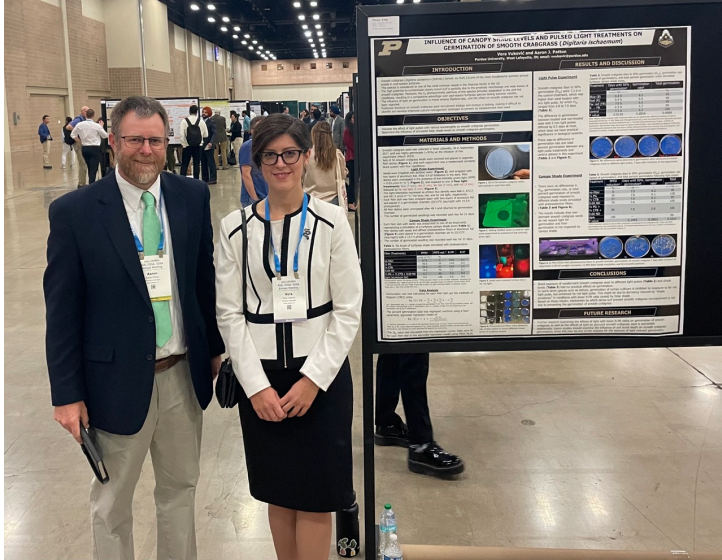
Dylan Whitlow: Thank you so much, it’s been such an enjoyable time providing produce and having interesting conversations with you. I am thankful to have met you briefly and learn about your recipes and meals you make with the food we grow.

Faith Hartman: Thank you all for being the best customers we could ask for. It’s your presence and smiles that brings the community to Community Supported Agriculture. It’s been a pleasure preparing vegetables for the past 22 week

Mason Naval: Hello Everyone! I hope you all have enjoyed the CSA these past 22 weeks! It’s been a great season for us here at the farm and seeing you all every Friday. I hope everyone stays safe, warm, and healthy through these winter months. I hope to be seeing you all again next season!

Jane Pickey: What a wonderful season, you guys! I’m extremely grateful for my time here at the student farm, and this second season has been just as, if not more wonderful than the last. It wouldn’t be the same without y’all!! While I’ve been doing some of the more behind the scenes work during pickup, I haven’t interacted as much with y’all this year. But the times that I have during the past seasons, you all have been so nice to speak with. I look forward to seeing most of you next season. Stay safe, cozy and well fed this winter!

Vera Vuković Places in Grad Research Presentations; Dr. Jada Powell and Dr. Cale Bigelow Presented at CSSA



Vera Vuković, Ph.D. student in the Patton lab, placed 1st in the Crop Science Society of America (CSSA), Turfgrass Science Division (C-5), graduate student research poster presentation contest and 3rd in the CSSA, Turfgrass Science Division (C-5), graduate student research oral presentation contest last week in San Antonio, TX. These presentations focused on her recently published work in Crop Science (<https://doi.org/10.1002/csc.2.21351>).

in a cool-humid climate

- Evaluating the use of soy flour as an alternative mineral nutrient source on high cut turfgrasses
- Golf green microbial populations as affected by localized dry spot

HLA Specialists Host Training for Extension Educators: Hands-on Horticulture Activities for All Ages



Ashley Adair, Organic Agriculture Specialist, John Orick, Extension Master Gardener State Coordinator, and Karen Mitchell, Consumer Horticulture Specialist, provided training to equip 22 Extension educators with the skills and curriculum needed to implement four hands-on horticulture activities in their local communities. Focused on plant propagation, weed identification, and hydroponics, the training emphasized practical techniques in an interactive format. Participants gained tools to provide horticultural education, encourage sustainable practices, and inspire experiential learning in their respective counties. This training aims to enhance community outreach efforts and strengthen connections between county and campus-based extension efforts.

Thanks to Pam Fisher for her help in the set-up.

Introduction: Throughout the transition area and cool-season regions, many lawns are increasingly being planted to turf-type tall fescue (*Schedonorus paniculatus*) TF due to its requirements for fewer maintenance inputs and summer stress performance. While TF has many benefits, brown patch (*Blizzaria sp.*) can severely impact turf quality and health. Continued efforts are being made to increase sustainability in fertilization inputs and practices to reduce the reliance on fungicides. Although previous studies have evaluated select natural organic fertilizers for their impact on foliar diseases, few have directly compared a spectrum of fertilizer sources. Additionally, the evaluation of contemporary soil health measurements versus synthetic and natural fertilizers are compared to non-fertilized and fungicide-treated turf samples limited. Thus, the goal of this field study was to evaluate a range of natural-organic fertilizers and a controlled-release synthetic fertilizer in their ability to suppress disease in a TF lawn.

Objectives:

1. Evaluate various natural-organic fertilizers and a controlled-release synthetic fertilizer over five years for their ability to primarily suppress brown patch in a TF lawn.
2. Assess select fertilizer treatment effects on soil health parameters after three years of continuous application.

Materials & Methods:

A field study when evaluating brown patch severity as affected by fertilizer source was conducted at the William H. Daniel Turfgrass Research and Diagnostic Center in West Lafayette, IN during 2020-2024 (Table 1). The study area consisted of a brown patch susceptible TF cultivar ('Empire') grown on soil lawn and mowed at 1 cm every 4 d. Plots were 0.9 by 1.9 m with four replications. Eight commercially available fertilizers representing a wide range of natural and synthetic sources were used (Biosol, composted poultry manure (CPM), Instant meal (IM), composted turkey litter (CTL), composted turkey litter plus iron (CTL+), feather, bone, blood meal (FBM), organic waste biodegradable (BOD), and polymer coated urea (PCU)). Fertilizer product descriptions and nutrient analyses are in Table 1. Fertilizers were applied in mid-May, mid-June, mid-July and late September/October applied at 243.5 kg N ha⁻¹ application, totaling 98 kg N ha⁻¹ yr⁻¹. Fertilizers were compared to a non-fertilized control and granular fungicide (Intrepid®) at a rate of 0.83 kg a.i. ha⁻¹ per application. Supplemental phosphate (0-45-0) and urea (30-0-0) were applied each May and late September/October, totaling 43 kg phosphorus (P) ha⁻¹ and 83 kg potassium (K) ha⁻¹ per year for each treatment. Overhead irrigation was applied to supplement rainfall, and other pests (weeds & insects) were controlled preventatively.

Each plot was mowed every year using double point grain mulch mowing in late May/early June using an active 8 roller isolate collected from a lawn in West Lafayette, IN. Visual turf quality was rated every 14 days on a 1-9 scale, where 1= dead, bare soil, irregular uniformity, density, and greenness, and 9=fully acceptable lawn. Turf disease severity was evaluated visually using a 0-100 percent linear scale, where 0 = no plot area affected and 100 = turf within plot was completely affected. To evaluate brown patch across each growing season and season visual turf quality, the area under the progress curve (AUPC) was calculated as: $AUPC = \sum_{i=1}^{n-1} (TQ_i + TQ_{i+1}) \times \Delta t$, where $\Delta t = 14$ is the addition of the current value to previous value, and $\sum_{i=1}^{n-1}$ is the sum between measurements. Soil health measurements in 2022 were collected on 5 August 2022 and all analysis conducted by Central Soil Health Laboratory (CSHL). All data were subject to analysis of variance using PROC GLM procedure in SAS v9.4 software system (SAS Institute, Cary, NC). Significant treatment means were separated by Tukey's Honestly Significant Difference (HSD) test ($\alpha = 0.05$).

Results:

Summary

- Select natural organic fertilizers (FBM & SM) and PCU consistently reduced seasonal brown patch compared to UTC (Fig. 1)
- Differences between select natural organic fertilizers and PCU were generally not found for seasonal turf quality and brown patch severity.
- A granular fungicide was most effective in reducing brown patch, but select fertilizer sources statistically reduced seasonal brown patch comparable to the fungicide during years three to five.
- After three years of application, biological properties did not change in the upper 5 cm and repeated fungicide applications did not negatively affect any measured soil biological properties (Table 3).

Soil Health Analysis

Treatment	Total C	DOC	Amid C	Soil Respiration	Soil pH
Control	3.76	3.76	182.146	18.075	6.4
CPM	3.61	3.62	189.3	17.2	6.318
CTL	3.61	3.62	189.3	17.2	6.318
FBM	3.61	3.62	189.3	17.2	6.318
BOD	3.61	3.62	189.3	17.2	6.318
PCU	3.61	3.62	189.3	17.2	6.318
Intrepid	3.61	3.62	189.3	17.2	6.318

Dr. Jada Powlen and Cale Bigelow presented research information on four recent projects. These included the following posters and oral presentations:

- Tall fescue brown patch severity as affected by repeated applications of natural and synthetic granular fertilizer sources
- Irrigation program effects on six cool-season lawn grasses

Ariana Torres Visits Zamorano University



Ariana Torres visited Zamorano University in Honduras to support the Purdue-Zamorano internship program. The program brings 10+ Zamorano senior undergraduates every year to the College of Ag to Purdue University and it has served as a pipeline for faculty to recruit graduate students.

Dhuha Mohamed Successfully Defended PhD Thesis



Congratulations to **Dhuha Mohamed** (Handa Lab) for successfully defending her PhD Thesis!

Xiaojin Wang Successfully Defended PhD Thesis

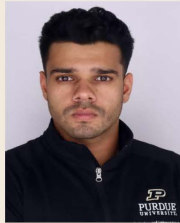


Congratulations to **Xiaojin Wang** (Varala Lab) who successfully defended her PhD thesis!

Dr. Fatemeh Sheibani and Dr. Cary Mitchell Published Research Article

Fatemeh Sheibani, Erik Runkle at Michigan State University, and **Cary Mitchell** published a research article in the Journal of the American Society for Horticultural Sciences entitled "Interaction of the Far-red Radiation Intensity and CO₂ Concentration During Early Indoor Production Stages of Red Leaf Lettuce." A direct link to the article can be found at <https://journals.ashs.org/jashs/view/journals/jashs/149/6/article-p354.xml>.

MS Defense Seminar: Tanvir Dutt



Tanvir Dutt
Major Professor: Dr. Ying Li
MS DEFENSE SEMINAR
November 25th@10 AM
HORT 222

INVESTIGATING THE ROLE OF EPIGENETIC REGULATORS IN PLANT NITROGEN USE

Abstract:

Nitrogen (N) is a macronutrient required for plant growth and is a major constituent of nucleic acids and proteins that are essential for several life processes. Plant response to N has been well understood at a molecular level but little is known about the chromatin or epigenetic level regulation of N response. Uncovering the epigenetic level regulation essential for plant N signaling and response is essential to improving our molecular understanding of N use efficiency (NUE). To fill this knowledge gap, we first performed a meta-analysis intersecting the published transcriptomic study of N-responsive genes in *Arabidopsis thaliana* with EpiNet, an extensive epigenetic regulatory network previously constructed in our lab through machine learning approaches, to identify a list of 18 potential epigenetic regulators that are predicted to control N response in plants. Next, by adopting a reverse genetics approach, we aimed to validate the *in-silico* prediction of these essential epigenetic regulators. To do this, we grew T-DNA insertional mutants for the genes encoding these epigenetic regulators, along with wild-type controls, under high and low N conditions, and compared them in various physiological traits. Our results indicate that 8 out of 10 confirmed knock-down mutants do show altered N-responsive phenotypes in comparison to the wild type. One of the mutants, *ashr2*, which is mutated in a gene encoding a putative SET-domain containing group protein (SDG) of putative histone methyltransferase, displayed reduced growth of primary root compared to WT in response to N. We performed RNA-sequencing to identify the differentially expressed genes that are induced or repressed by ASHR2 in N treatments to gain further insight into the molecular underpinnings of the ASHR2-mediated N response in roots. In summary, our study has revealed knowledge on important epigenetic regulators in plant N responses, which has the potential to be extended to crop species as novel targets for enhancing NUE.

Save the Date: 2025 Indiana Hort Conference and Expo

HORT INDIANA 2025
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www.IndianaHortConference.org

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Horticulture and Landscape Architecture

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Newsletters:

Facts for Fancy Fruits: <https://fff.hort.purdue.edu>

Vegetable Crops Hotline: <https://vegcropshotline.org/>

Purdue Landscape

Report: <https://www.purduelandscape.org>

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