

Sustainability Council
Spring 2022

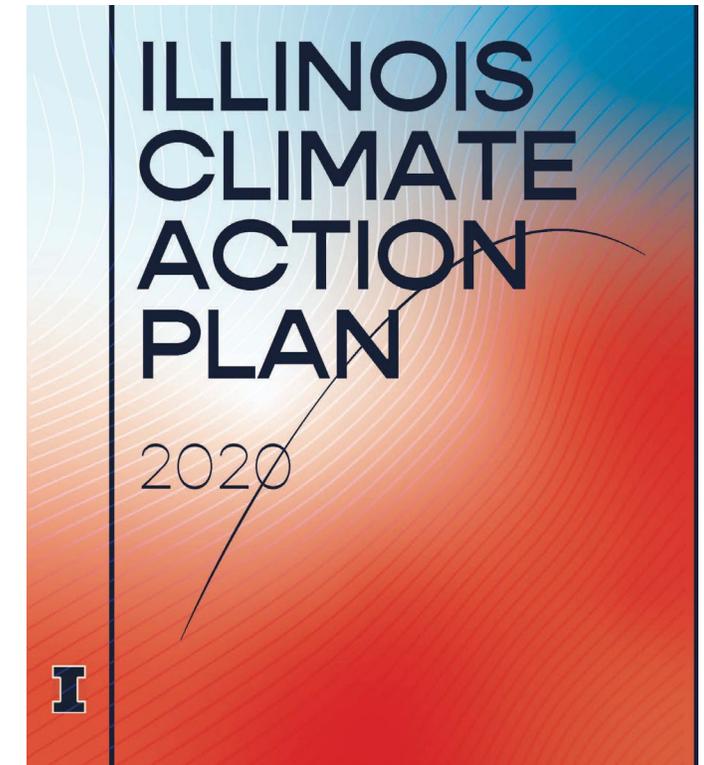
May 12, 2022



**Institute for Sustainability,
Energy, and Environment (iSEE)**

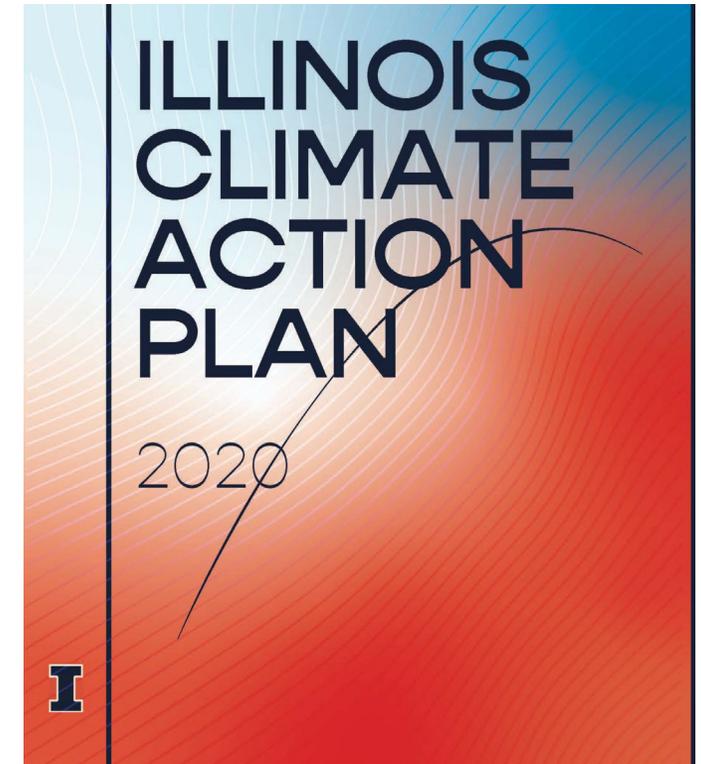
Members of Council

- **Chair:** Robert J. Jones, Chancellor, University of Illinois at Urbana-Champaign
- **Vice Chair:** Madhu Khanna, Interim Director of iSEE
- Andreas Cangellaris, Vice Chancellor for Academic Affairs and Provost
- Barry Benson, Vice Chancellor for Advancement; Illinois Foundation Senior Vice President
- Danita Brown Young, Vice Chancellor for Student Affairs
- Susan Martinis, Vice Chancellor for Research and Innovation
- Paul Redman, Interim Associate Provost for Capital Planning
- Mike DeLorenzo, Senior Associate Chancellor for Administration and Operations
- Iowa Mwilambwe, Associate Chancellor for Auxiliary, Health & Well-Being



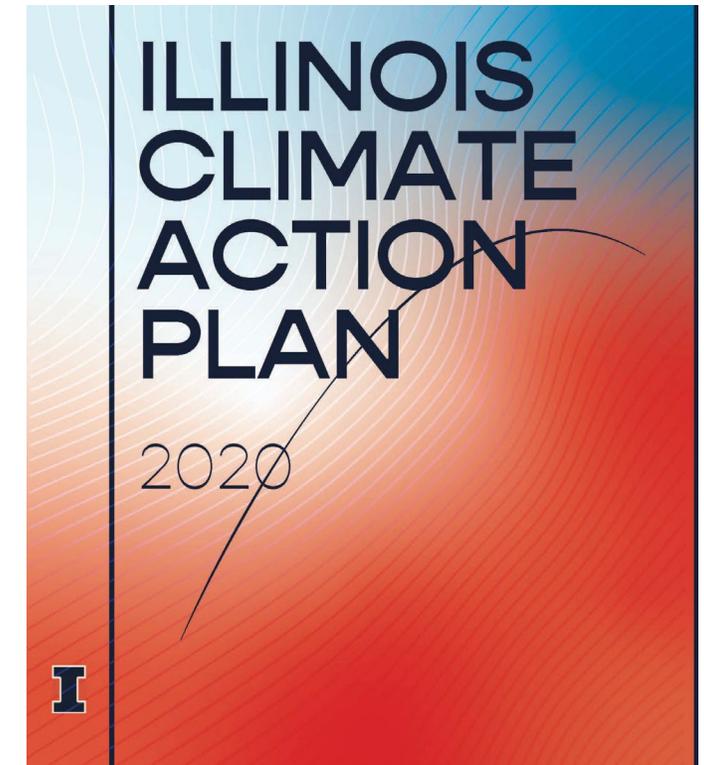
Members of Council, continued

- Rashid Bashir, Dean, College of Engineering
- German Bollero, Interim Dean, College of Agricultural, Consumer, and Environmental Sciences
- Kevin Hamilton, Dean, College of Fine + Applied Arts
- Venetria Patton, Dean, College of Liberal Arts & Sciences
- Ehab Kamarah, Interim Executive Director, Facilities & Services
- Robin Kar, Chair, Senate Executive Committee
- Enoma Egiebor, President, Illinois Student Government (ISG)
- Jack Reicherts, Chair, Student Sustainability Committee (SSC)
- Owen Jennings, Co-Chair, Student Sustainability Leadership Council (SSLC)



Non-Voting Members and Invited Guests

- Emily Heaton, Professor, Crop Sciences
- Kim Kidwell, Associate Chancellor
- Brent Lewis, University Landscape Architect
- Jessica Nicholson, undergraduate student
- Bill Stewart, Professor, Recreation, Sports, and Tourism
- Luis Rodriguez, iSEE Associate Director for Education and Outreach
- Jeremy Guest, iSEE Associate Director for Research
- Eric Green, iSEE
- Elizabeth Murphy, Managing Director of iSEE
- Jennifer Fraterrigo, iSEE Associate Director for Campus Sustainability
- Morgan White, Facilities & Services Associate Director for Campus Sustainability
- Meredith Moore, iSEE Sustainability Programs Manager



- Introductions
- Sustainable Land Management Plan
- Waste Reduction Strategies
- Updates
 - Campus Landscape Master Plan
 - Sustainability in Gen Ed requirements
 - STARS → Shifting to Platinum
 - Student Groups
 - Old business

Sustainable Land Management Plan



Institute for Sustainability,
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Charge to SLM Committee

- A. *Sustainable land management practices*: develop plan for evaluating and inventorying sustainable land management practices on the South Farms on non-research land, and for increasing the sustainability of South Farms land management practices.
- B. *Agronomy Handbook*: develop plan for updating the UIUC Agronomy Handbook with best management practices for sustainable land management.
- C. *Outreach with university tenants*: Work with interested tenants on University-owned land to showcase selected sustainable land management practices in the updated Agronomy Handbook.

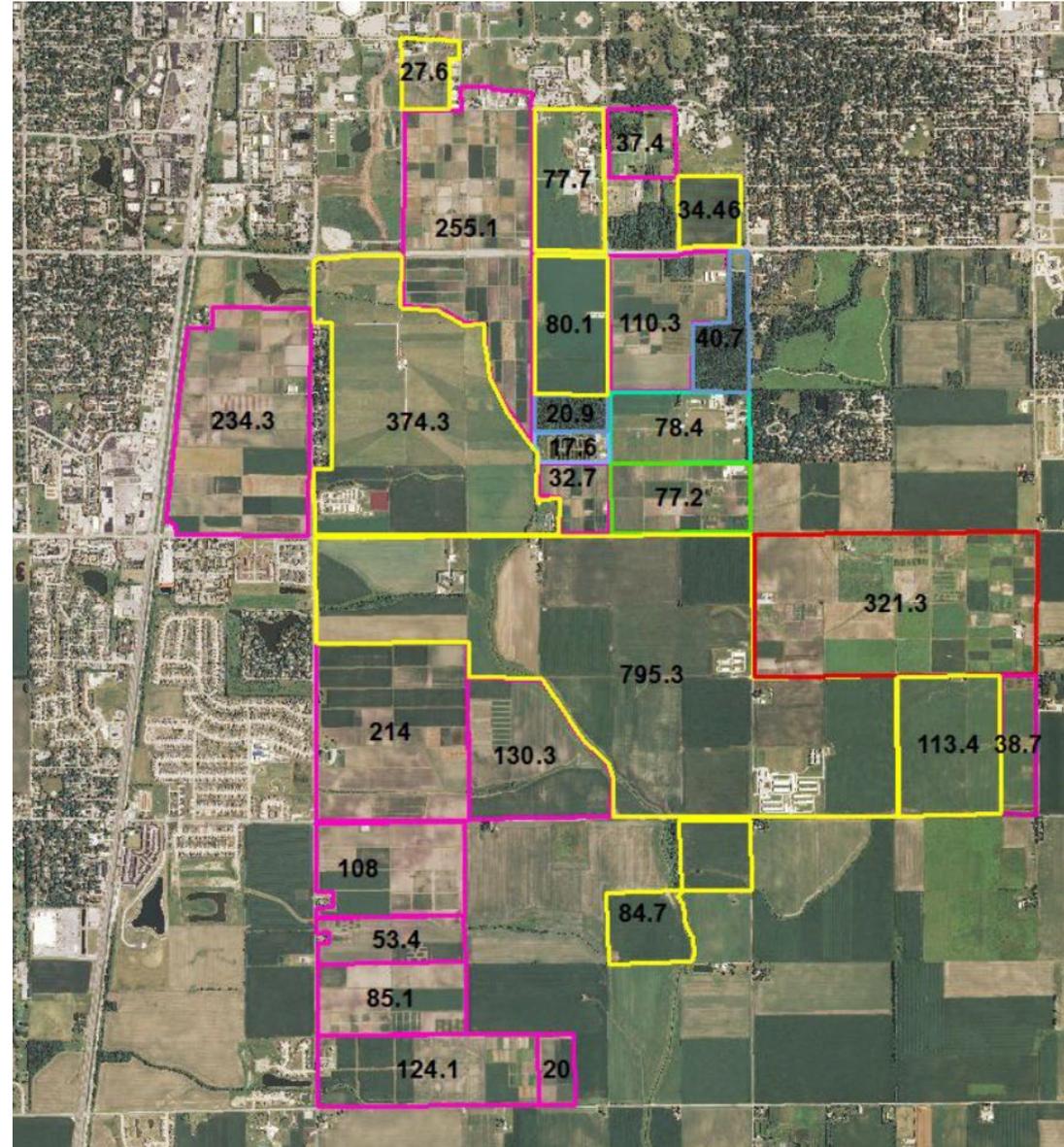
Dr. Emily Heaton

*Professor of Crop Sciences and
member of SLM Committee*

College of Agricultural, Consumer & Environmental Sciences

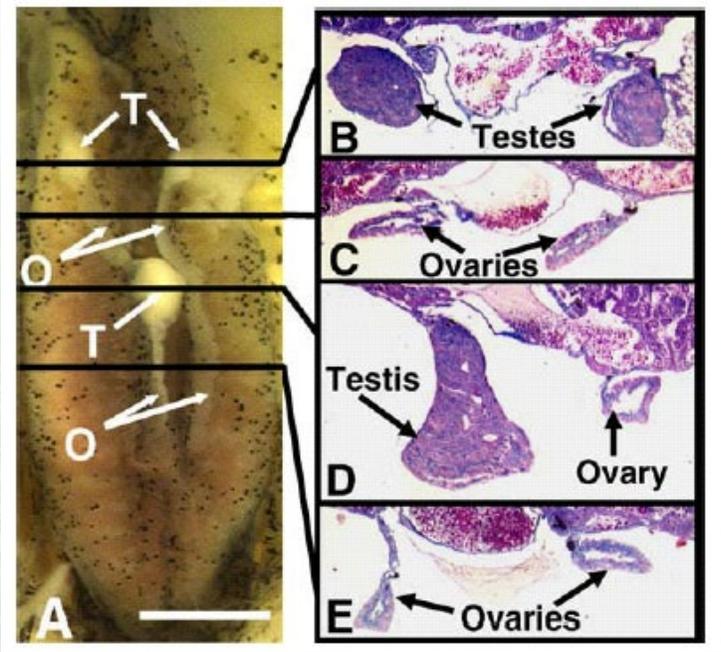
Campus Research Farms

Department	Acres
Animal Sciences:	1508
Crop Sciences:	1654
Field crops	1233
Fruit & Veg	110
Energy Farm	321
Research	900
Fill	654
Ag Biosystems Eng:	77
Total	~3300

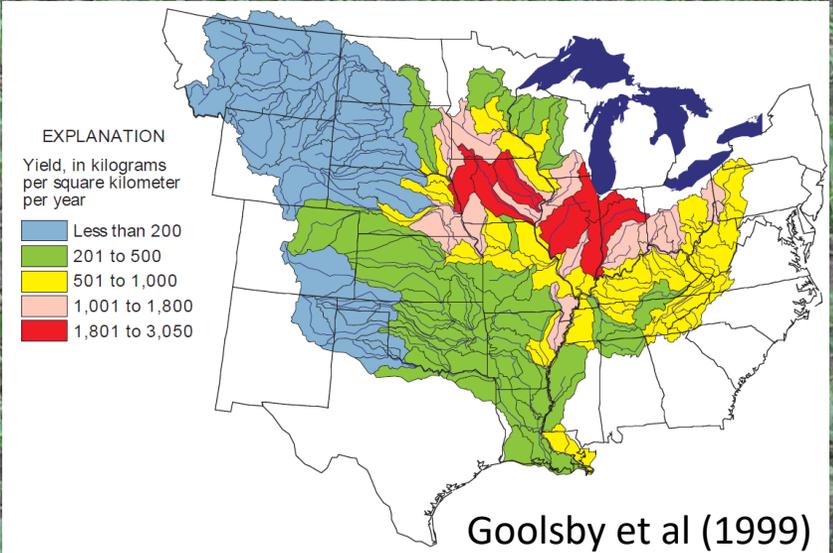




5/11/17, Sidney IL



Hayes et al (2002)



Soil degradation on campus → faculty consider using off campus farms



Waterlogging & Erosion
Poor access to irrigation



Compaction



Degraded structure
& nutrient content

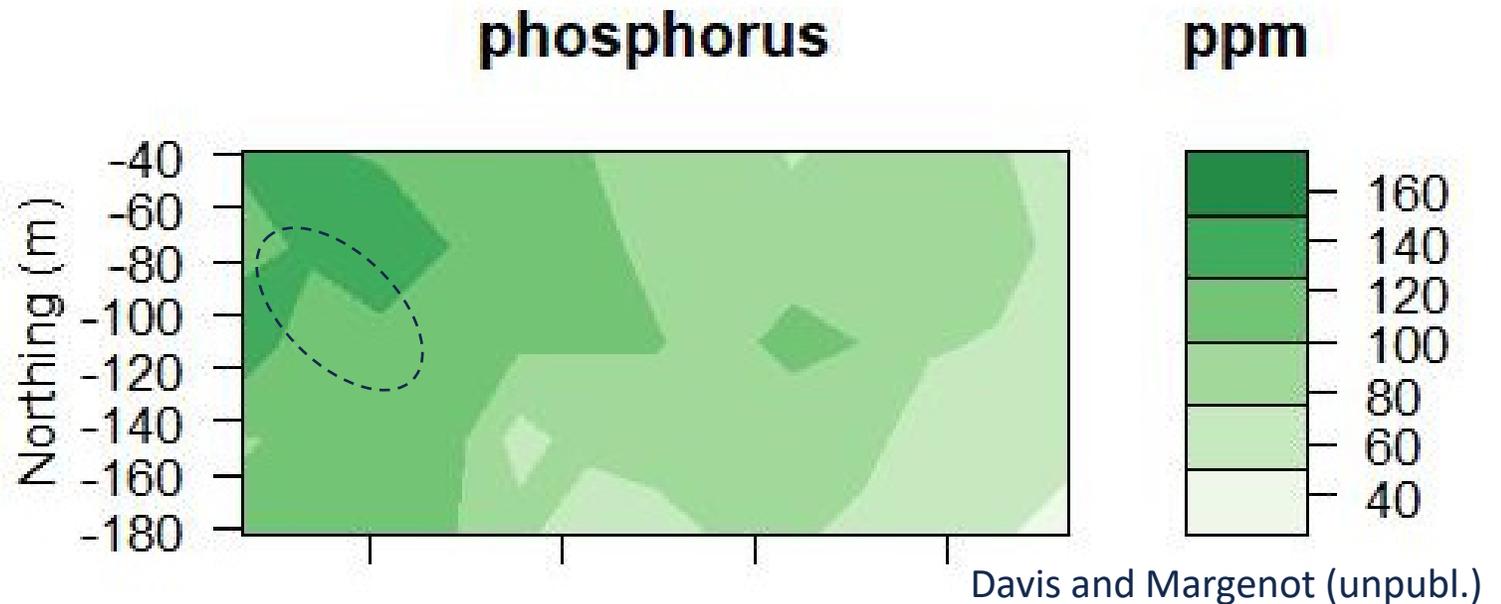
Photos: M.M. Williams



Managing Animal Waste



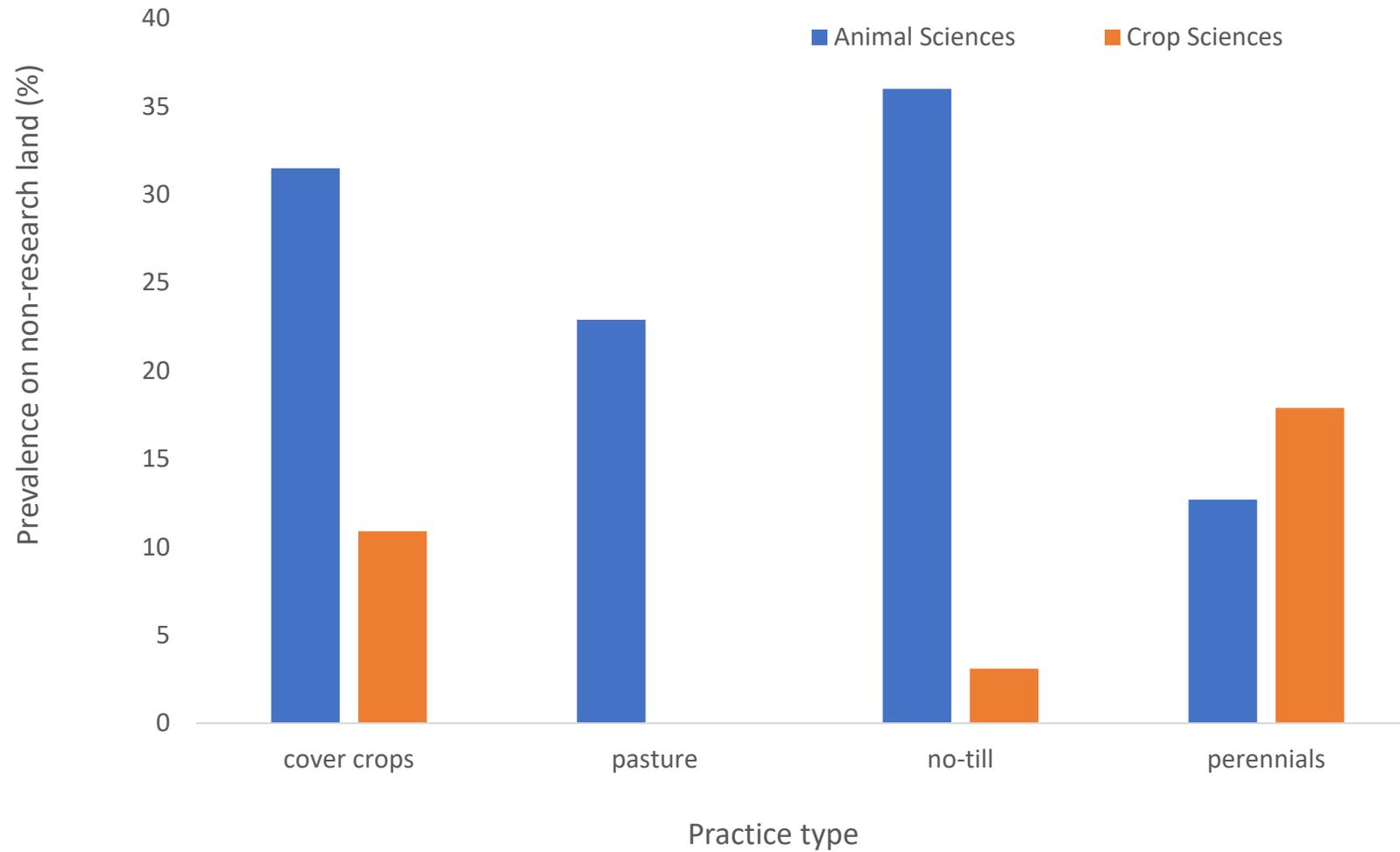
**Area to
southeast of
Dairy Farm →**



Sustainable management on Campus Research Farms



Inventory of current soil and vegetation practices associated with sustainability (non-res. land)



Jan. 2022



Priority Practice 1: compost manure

- Benefits:
 - volume reduction
 - odor reduction
 - kills bacteria & weed seeds
 - nutrient stabilization
 - build SOM/structure
 - reduce N fertilizer cost
- Costs:
 - pile management
 - spreading
 - compost turner (\$25-\$80K)
- Timeline: 18-36 mo.

manure + organic residues
+ turning + time =
compost



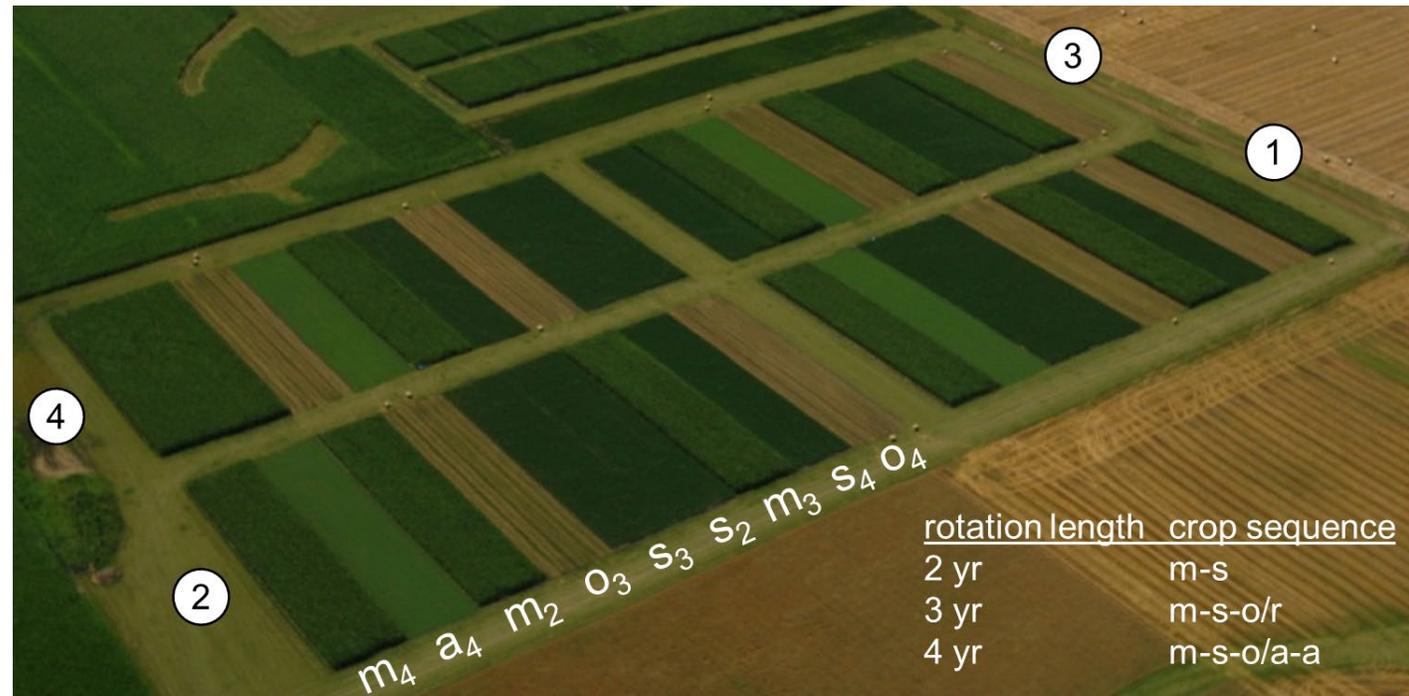
windrow management



Priority Practice 2: cropping system diversification

- Benefits:
 - reduced loss of soil and nutrients
 - pest suppression
 - reduced reliance on synthetic inputs
 - yield/climate resilience
 - additional working days
- Barriers/constraints
 - fill/research: must avoid soil legacies
 - lost grain income (will vary)
 - additional field ops (cc: \$22,500 over 900 acres)
 - seed/input costs (\$60 to \$150/acre)
 - drainage issues
- Timeline: 2-4 years

- continuous living cover
 - cover crops (gateway practice)
- extended rotations
 - more crop species diversity
 - all entry points present



Priority Practice 3: Agronomy Handbook chapter on SLMPs

- **Benefits:**
 - Integrated systems approach
 - Focus on implementation and adoption pathways
 - Aid both landowners and tenants
- **Costs:**
 - Postdoc for 3 months (approx. \$25K)

Cropping Systems and Alternative Crops

by Phillip Alberti, Talon Becker, Jennifer Jones, and Nathan Johanning; adapted from the previous version of this chapter written by Emerson Natziger

Introduction

Two crops—corn and soybeans—have come to dominate the cultivated area of Illinois over the past 70 years (Figure 5.1), moving from around 60% of cropped acres in 1950 to more than 90% in recent years. This has been, in large part, due to increases in soybean acreage, which increased from around 20% of total harvested acres in 1950 to around 45% of total harvested acres in recent years.

In 2000, Illinois corn and soybean acreage were near equal, with approximately 11 million harvested acres and 10.5 million harvested acres, respectively. In the following decade corn acreage saw a large increase, peaking in 2007 at about 13 million acres (Figure 5.1). This increase in corn acreage and movement away from the relatively even split of corn and soybean acreage coincided with a large increase in domestic ethanol production due to increases

in gasoline prices and the adoption of federal bioenergy policies (Wallander et al., 2011).

Over the past decade, corn acreage has receded back to pre-2000 acreage levels, with an average of 10.9 M acres harvested from 2016 through 2020. Because corn and soybean acreage have continuously accounted for more than 90% of Illinois' total acreage in recent years, this decrease in corn acres has been balanced by increased soybean acres. Illinois wheat acreage declined by over 60% during the past 70 years, from approximately 1.4 M harvested acres in 1950 to approximately 0.5 M harvested acres in 2020. While somewhat volatile, the decline in harvested wheat acres over the past several decades is apparent. This decline has been mirrored by an even larger decline in hay acreage, with approximately 2.8 M hay acres harvested in 1950 down to approximately 0.5 M acres in 2020. Harvested acres of oats for grain declined starkly in the 1950s and 1960s, from about 3.8 M acres to less than 1 M acres. Acreage continued to decline, although slower, with harvested acres falling below 100,000 in 1993 and reported acreage in recent years ranging from 10,000 – 15,000. Oats are used more widely as a companion crop for forage establishment or often as a cover crop that will winterkill, particularly in the state's northern and central regions.

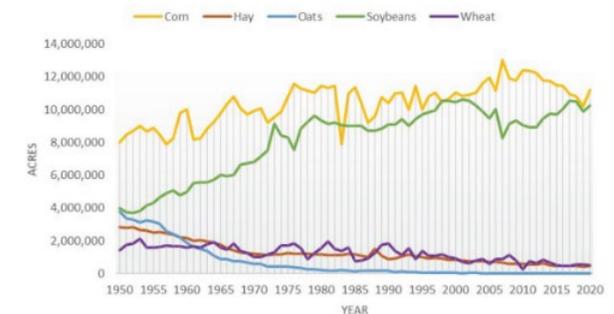


Fig 5.1. Harvested acres of five main crops in Illinois, 1950-2020. Data from the USDA National Agricultural Statistics Service.

2021 chapter by Alberti et al.



Next Steps

- 1) Update Agronomy Handbook with a new chapter on best management practices for sustainable agriculture
- 2) Expand the acreage planted in cover crops and proceed with cropping system diversification
- 3) Evaluate costs and logistics of composting animal manure

Waste Reduction Strategies



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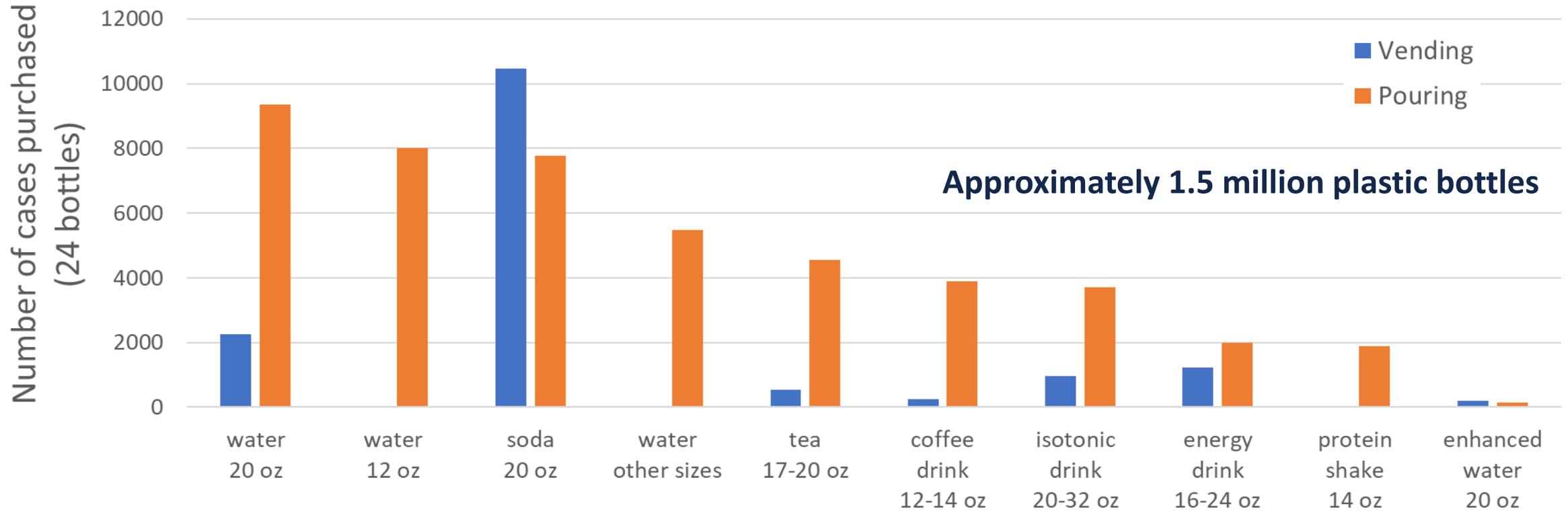
Dr. Jennifer Fraterrigo

Associate Director for Campus Sustainability

Institute for Sustainability, Energy, and Environment

High Demand for Beverages Delivered in Plastic Bottles

Number of cases purchased for vending and pouring operations (2020)



Current approach to recycling plastic is not enough

- FY21, 40 tons of plastic waste (#1 - PET and #2 - HDPE) were collected at the University Waste Transfer Station
- China's SWORD program reduced importation of recycled plastics. Plastics are piling up at recycling facilities and in many cases being sent to landfills. In 2019, **86%** of total plastic waste was landfilled and **10%** incinerated (Milbrant et al. 2022).
- Plastic quality degrades during reprocessing. Although PET bottles recycled 7-8 times, virgin material is often added. Aluminum and glass can be recycled infinitely.

Existing Recommendations about Plastic Waste Reduction - Drinking Water

- Water Drinking Behavior Survey
 - Campus-wide survey to gain a better understanding of drinking water behavior on campus
 - Successful at other universities seeking to reduce plastics (Allegheny & Augsburg College)
- Water Filter System Tracking
 - Determine number, location, and status of all bottle filling stations on campus
 - Supported by National Wildlife Federation's Campus Race to Zero Waste

1) Discuss options for reducing plastic waste with Coke representatives

- Benefits

- Coke has worked with other schools on sustainability initiatives
- Coke publicly committed to reducing plastic waste
 - 35% recycled plastic > 50% by 2030
- If we replace plastic with aluminum, better outcomes
 - In 2018 the US recycling rate was 49.8% for aluminum cans vs. 29% for PET bottles
 - Aluminum generates more profit than plastic for Waste Management
 - Avg price/bale aluminum: \$100 vs. Avg price/bale plastic: \$20
 - Money acquired through recycling could be used to improve waste and recycling infrastructure. The existing recycling baler is from the 1980s.

1) Discuss options for reducing plastic waste with Coke representatives

- Challenges

- Regional bottler (East St. Louis) may not have capacity to meet demand for aluminum cans, fewer drink options available in cans
- Raw material cost for a can is about 25-30% higher than a PET bottle of a similar volume, potentially increasing the price of vending machine products
- University currently receives 40% commission on plastic bottles and 25% on aluminum cans
- Open cans are not easy to transport in backpack, etc.; Silicon lids could be distributed with UIUC Branding

1) Met with Coke representatives to discuss how to align campus sustainability goals with purchasing on 4/28/2022

- Coke transitioning to bottles with higher content of recycled PET (rPET)
- Support increased plastic waste collection (materials for rPET)
 - Reverse vending machines (RVM)– donation/reward for bottle/can recycling
 - Provide blueprints for messaging and events (social media, signage, materials for athletic events)
- Does not see increasing aluminum cans as a viable option

2) Promote Consumption of Local Drinking Water

Pending results of survey and inventory of bottle filling stations

- Install more bottle filling stations, near vending machines if possible
- Educate campus community on the high quality of local drinking water and life cycle of a plastic bottle



3) **Switch to compostable materials**

- Switching from plastic to compostable materials would reduce plastic use, but we currently send compostable items to landfill
- Need a composting solution on campus for compostable materials

4) **Prioritize an Organic Waste solution**

- Evaluate an anaerobic digester solution for campus

Next Steps

- 1) Promote Local Drinking Water
- 2) Work with Coke and their partners
 - Connect with RVM manufacturer, Atlas Solutions, to discuss purchasing RVM units
 - Activate Zero Waste and Engagement iCAP Teams to further develop messaging and event plans
 - Develop plans for waste audit
- 3) Meet internally to align priorities and discuss sale of recycled PET bottles

Updates



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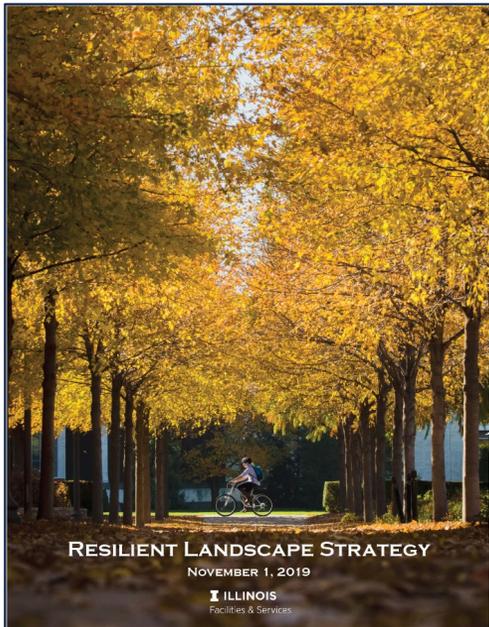
**Institute for Sustainability,
Energy, and Environment (iSEE)**

- Campus Landscape Master Plan
- Sustainability in Gen Ed requirements
- Student group activities and goals
- STARS
- Old business
 - Green Labs Task Force
 - Clean Energy Plan
 - Drainage from Vet-Med parking lot

Brent Lewis

University Landscape Architect

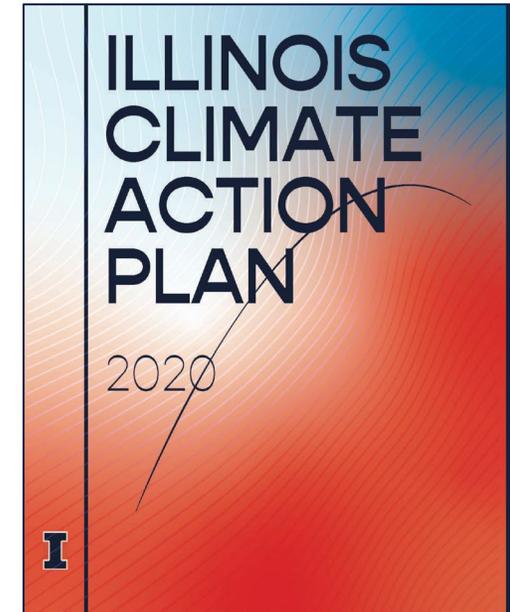
Facilities & Services, Capital Programs



Key Recommendations

1. Develop a Landscape Master Plan
2. Establish a Landscapes Department in F&S
3. Achieve exemplary rainwater management
4. Revise staffing and training at F&S Grounds
5. Allocate \$1M/year to Landscape Improvements
6. Create a Rainwater Utility Fee in UES Enterprise

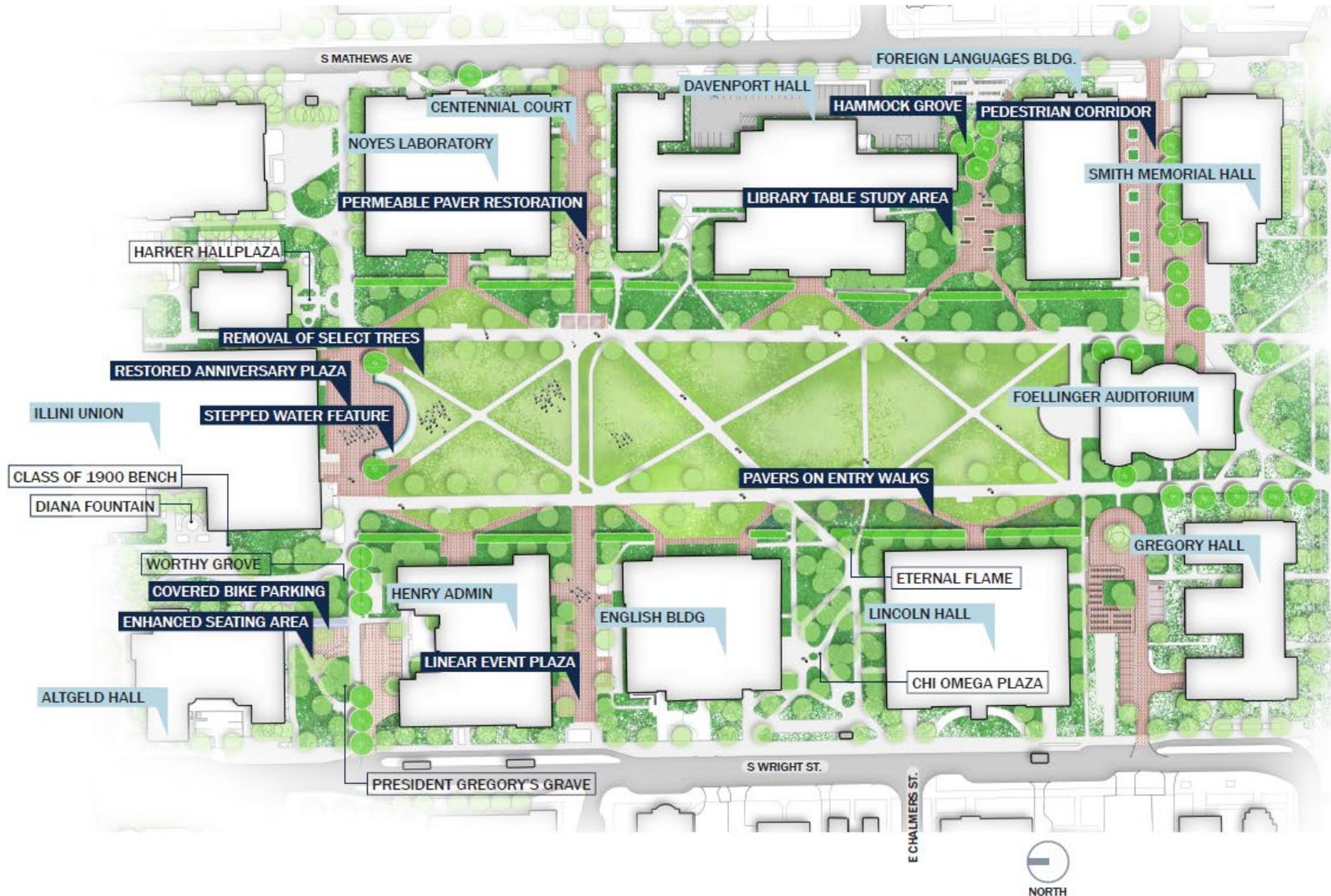
I ILLINOIS
Facilities & Services



Stakeholder Input Common Themes

1. The landscape strongly contributes to the economic success of the university.
2. Address areas of deferred maintenance first.
3. More even/equitable investment in landscape across campus.
4. Higher priority set on landscape performance and aesthetics.
5. Intentional funding strategy is needed.
6. Campus should be a world leader in resiliency and stormwater management.
7. Need more maintenance staff across campus, including special skill-sets.
8. Places for people to gather, sit and study is the #1 “missing element” on campus.
9. Current and prospective students want a campus that places sustainability at the forefront by making it visible.
10. Landscape is integral to the mental health of the entire campus community.

Campus Landscape Master Plan



MAIN QUAD RECOMMENDATIONS

- Restore Centennial Court paving with permeable pavers and position this space as a linear event plaza with tent anchors
- Restore missing trees within Centennial Court
- Update Anniversary Plaza as a small amphitheater on the north and a simple stepped water / ice feature within the south curve
- Position with water feature for interest year-round, integrating water, ice and art
- Provide upgraded lighting with self-watering annual baskets
- Enhance three courtyards to better serve as seating, gathering, respite
- Reposition Nevada Street service corridor as a “front door” to the Main Quad.

Jessica Nicholson

Undergraduate student

Purpose and Details

Proposal: Create a 3 credit-hour gen-ed category within Natural Sciences and Technology for a course in sustainability and environmental topics

- Will be an option for all undergraduate students to fulfill their Natural Science and Technology credit hours
- Initially passed as an Illinois Student Government resolution; must pass it through the UC Senate
- Sponsors and Contributors
 - Author: Jessica Nicholson
 - Senate Sponsors: Senator Alexandra Gergova, Senator Jack Reicherts, Senator Alexandra Nevarez, Senator Bryce Davis, Senator Greg Davidson, ISG Vice President Nicole Arnold
 - Contributors: Sustainability Gen-Ed Working Group, iSEE, Education and Engagement iCAP Teams, Gen-Ed Board Working Group, ISG Environmental Sustainability Committee
- Sections include
 - Sustainability Education Definition and Learning Outcomes
 - Courses to fulfill requirement, Current Capacity and Expected Demand

Sustainability Gen Ed. Requirement

Concerns and suggestions raised by Gen-Ed Sustainability Working Group

- The definition of sustainability is too broad for the “natural sciences and technology” (NST) category of Gen-Ed
- Guidelines for courses that might meet requirement are not included
- Learning outcomes that build on iCAP goals should be drafted
- Add information about initiatives developed by peer institutions regarding integration of sustainability into undergraduate curricula
- Add estimates of demand, additional seat needs, budget and staff implications, impact on facilities and services
- List existing courses that truly fit the NST category and require few, if any, pre-requisites
- Need to build a coalition of support for the proposal among colleges

Course Capacity and Projected Demand

Total occupied capacity = 0.638

Undergraduate enrollment 2020 = 34,529

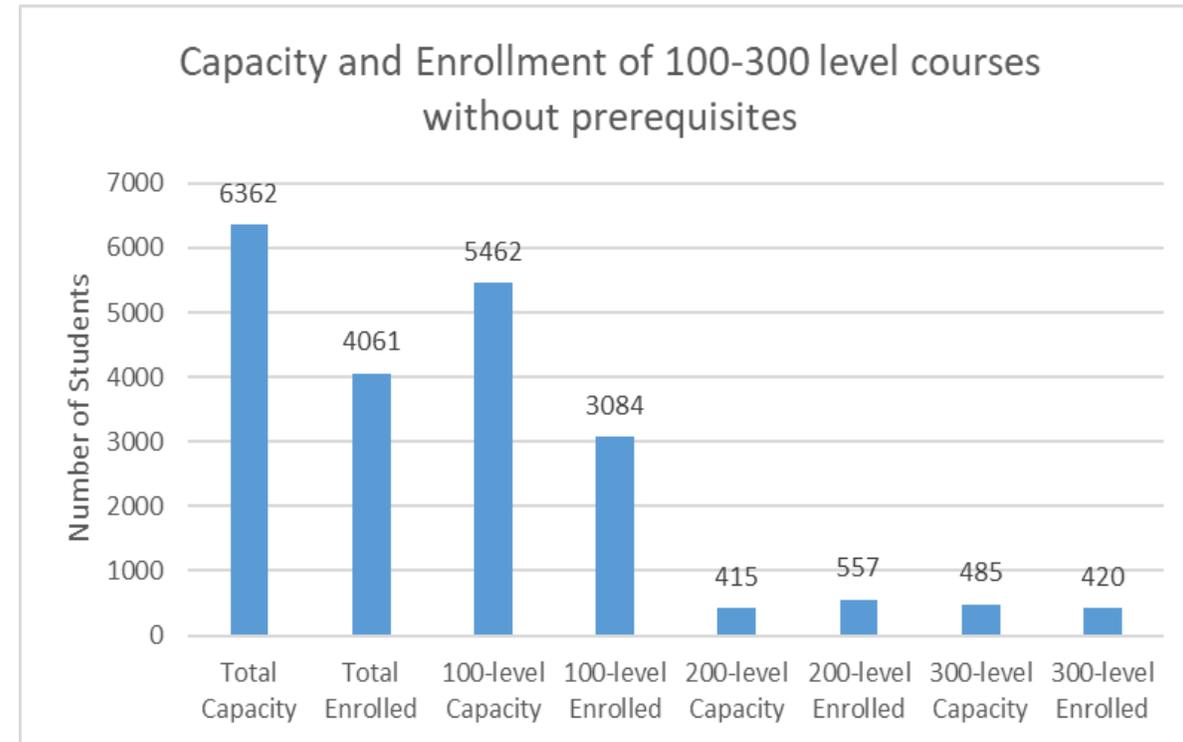
Current # students taking classes = 0.118

Projected # undergraduates taking these classes due to requirement = 0.67

- Average assumption due to this requirement becoming a 3rd category in NST

Needed capacity in all sustainability Gen-Ed courses = 23,019

- Additional courses will be added and students have the option of the other two NST categories



Sustainability Gen Ed. Requirement

Next Steps

- Written proposal in revision, endorsements gathered
- iSEE will facilitate gathering feedback from Associate Deans
- Submit proposal to UC Senate committees in AY23 for approval
- Educational Policy
- Campus Operations
- Senate Executive Committee
- Invite supporters and contributors to speak on behalf of proposal during discussion
- Introduce final proposal to Senate floor
- Request approval of new requirement from Gen-Ed Board

Future of the Proposal

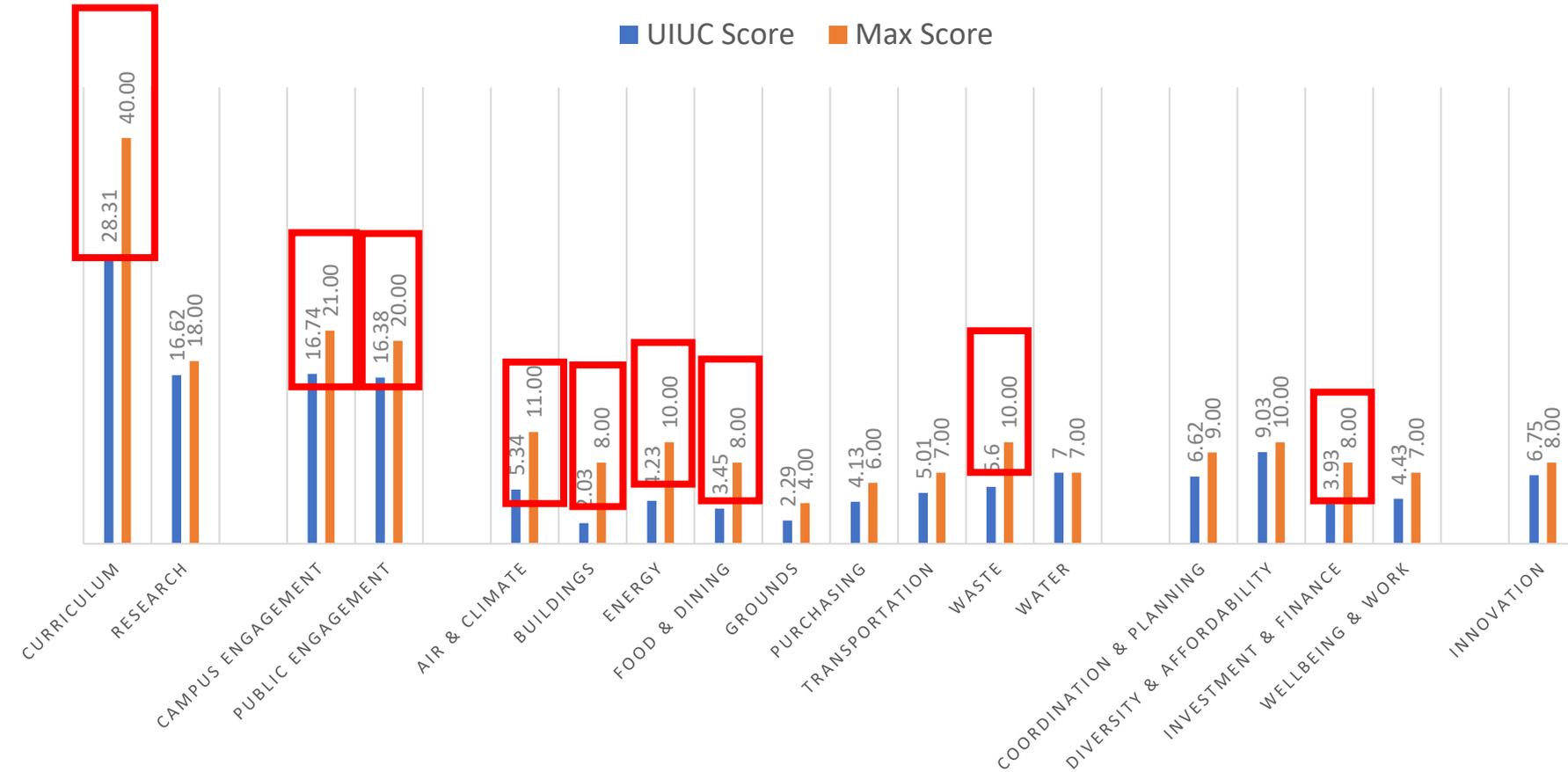
- This proposal creates a category within Natural Sciences that is an option for students
- Will significantly increase enrollment in sustainability-focused courses and build a strong course structure focused on sustainability education
- Is a step toward a stand-alone sustainability general education requirement



Meredith Moore

*Sustainable Programs Manager
Institute for Sustainability, Energy, and Environment*

STARS → Shifting to Platinum



Preliminary score (72); Platinum status (85)

- **What should we work on to improve our score?**
- **Curriculum**
 - Increase # of sustainability courses
- **Campus/public engagement**
 - Peer-to-peer engagement, improve tracking mechanisms
- **Air & climate**
 - Decrease overall GHG emissions
- **Buildings**
 - LEED O+M
- **Energy**
 - Building energy efficiency/percentage of energy consumption from clean sources
- **Food & dining**
 - Increase % of purchases on sustainable/ethically produced products
- **Waste**
 - Decrease landfill %, increase recycling %
- **Investment and finance**
 - Increase % of sustainability investments

Jack Reicherts, SSC

Owen Jennings, SSLC

Garrett Forest, ISG

The SSC allocated \$800,000 to 16 different projects this semester, varying from:

- A life-sized whale marionette made of plastic water bottles
- Energy-efficient freezers
- More water-bottle fillers
- A new bike canopy
- An environmental justice outreach and research initiative
- ... and more!





Student Sustainability Committee

This year, we are celebrating our 20th year of stewarding the Illinois Green Fund having dedicated over \$15 million to 316 individual projects!

Other recent achievements:

- Funded and co-hosted the first-ever Sustainability Grammys!
- Restructured our committee with new roles dedicated to student and community outreach
- Broke 500 members on our mailing list

Looking forward:

- Coordinating the Reimagine Our Future Undergraduate Sustainability Competition
- More education and outreach
- Potentially a new fulltime staff position in the Office of Student Sustainability

Jack Reicherts, SSC

Owen Jennings, SSLC

Garrett Forest, ISG

- **2022-23 Co-Presidents**

- Jack Reicherts, Owen Jennings, Maiah Caise, and Danika Ford!

- **Major accomplishments of Spring 2022**

- March 22, 2022, The SSLC co-authored a letter to Moore, Killeen, Jones, Khanna, Benson, Martinis BOT with SECS, ISG on the topic of divestment – students have received no reply.
- **Earth Month**
 - Green Quad Day – almost 50 unique student *and* community groups!
 - Co-hosted the Sustainability Grammys with iSEE, SSC, and the IU Board
 - Tuesday Talks at Bevier Cafe – attendance was even better than October 2021!
 - Matt Harvey – Citizens Utility Board
 - Alexa Smith & Josh James – Karma Trade
 - Laura Haber – activism at UIUC
 - Aidan Brougham-Cook – Clean Meat
 - Screening of *The Lorax* with IU Board – 30 attendants!
 - Letter writing with Citizens Utility Board

- **Next Semester**

- Finalizing bylaws, and continuing to establish the SSLC as an enduring presence on campus
- Facilitating the second annual Student Sustainability Summit in October

- **Student Opinion on Campus Landscape Master Plan**

- Critical and necessary step towards making campus more sustainable
- Sites that integrate native plants into their design, such as a number of the proposed turf conversions on the Engineering Quad, are phenomenal, but there could be more such areas.
- Opportunity to bolster a healthy working relationship between sustainability focused student groups and F&S through collaboration.

Jack Reicherts, SSC

Owen Jennings, SSLC

Garrett Forest, ISG

Morgan White

Acting Director of Capital Programs

Associate Director of F&S for Sustainability

1) **Green Labs Task Force**

- iSEE is scheduling a meeting with the new DRS and F&S stakeholders to initiate this task force

2) **Comprehensive Energy Plan**

- Seniors in ABE interviewed stakeholders to develop a draft scope for this study

3) **Drainage from Vet-Med parking lot**

- F&S is scheduling a meeting to discuss the needs, anticipated costs, and potential funding

Thank you



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