DataFEWSion 2022 Symposium

Harnessing the Data Revolution: Informed Policy for Society and the Environment

January 11, 2022
ISU Alumni Center
Ames, Iowa

DataFEWSion Graduate Traineeship
Innovations at the Nexus of Food Production, Renewable Energy, and Water Quality

Schedule

Schedule	Tuesday, January 11, 2022	Location
8:00 am	Coffee & Pastries	Executive Board Room
9:00 am	Introduction: Sarah Ryan, Project Director Keynote: John Crespi, CARD Director	Executive Board Room
10:00 am	3 Minute Videos: Trainees Session 1 (20 min) Break (10 min) Session 2 (20 min)	Executive Board Room
10:50 am	Break	
11:00 am	Poster Session: Trainees	Ballroom
11:45 pm	Lunch	Ballroom
12:45 pm	Oral Session 1: Trainees	Executive Board Room
1:45 pm	Break	
2:00 pm	Workshops Section A: Fernando Miguez *Weather and Soil Data Bases with R: Retrieval, Manipulation and Visualization* Section B: Akash Vidyadharan *Industry Case Studies using AI, Robotics & Computer Vision*	Section A: Ballroom Section B: Executive Board Room
3:00 pm	Break	
3:15 pm	Oral Session 2: Trainees	Executive Board Room
4:00 pm	Speed Networking	Ballroom
4:30-6 pm	Happy Hour	Ballroom

Keynote Speaker

John Crespi

Director of the Center for Agricultural and Rural Development

The Data Revolution is Not a Knowledge Revolution. Yet. How Interdisciplinary Work will Help it Get There.

Workshop Presenters

Fernando Miguez

Associate Professor, Agronomy
Agro-ecosystem Modeling Lab

Weather and soil data bases with R: retrieval, manipulation and visualization

This workshop will be an introduction to using R for retrieval and visualization of weather and soil data. We will use the apsimx R package and perform simple analyses and interpretation through the use of tables and figures. It would be highly beneficial to have, ahead of time, R installed (version 4.0.0 or newer) and R Studio - recommended. Previous familiarity with R is desirable.

Industry Case Studies using AI, Robotics & Computer Vision

In this session, InfraLytiks will present some very interesting capabilities and case studies in which automation and Artificial Intelligence (AI) were used in various different industries and data types in order to save time, costs and man-power successfully. The focus will be on successfully developed & implemented case studies, the tools used to create them and the scientific methodologies for the processes along with some live demonstration of the algorithms in action. There will be an open discussion session with the audience to see how such techniques can be directly applied to their field of studies and research.

Akash Vidyadharan

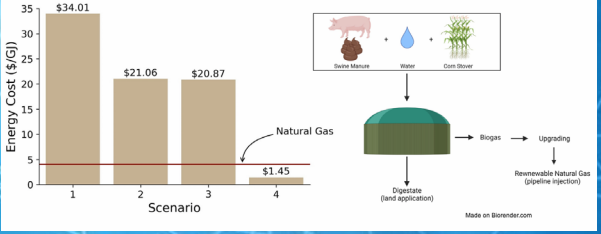
Founder and
Chief Technology Officer,
InfraLytiks

Poster Session

Iowa State University
Department of Agricultural and Biosystems Engineering

Gabrielle Myers, Daniel Andersen, D. Raj Raman

Technoeconomic analysis finds **centralized** swine manure and corn stover co-digestion systems have an **economic advantage** over distributed systems



Gabrielle Myers
Agricultural & Biosystems Engineering

Faculty Advisors:
Raj Raman
Daniel Anderson

Contact:
gmmyers@iastate.edu

Alex Cleveringa
Agronomy

Faculty Advisor:
Fernando Miguez, Agro-ecosystems Modeling Lab

Contact:
alexc1@iastate.edu

Iowa State University
Department of Agronomy

DataFEWSion Annual Symposium
11 January 2022

Alex Cleveringa, Anabelle Laurent, & Fernando Miguez

Univariate Analysis of End-of-Season Corn Stalk Nitrate Test Dataset

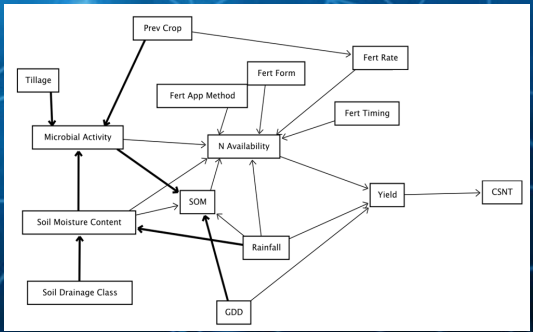


Fig 7. Conceptual DAG of relationship between variables in the dataset

Poster Session

Enhancing the Resilience of Houston's Wastewater System Under Wet Weather Using Emerging Technologies

Jarrett Morrison[1], Lu Liu[1]*, Jeseth Delgado-Vela[2], Andrew Shaw[3], Lauren Stadler[4], Priyanka Ali[4]

1 Department of Civil, Construction and Environmental Engineering, Iowa State University 2 Department of Civil and Environmental Engineering, Howard University 3 Black and Veatch in Houston Texas 4 Department of Civil and Environmental Engineering, Rice University

Jarrett Morrison

Civil, Construction, and Environmental Engineering

Faculty Advisor:
Lu Liu, Human-Environmental Systems Research Group

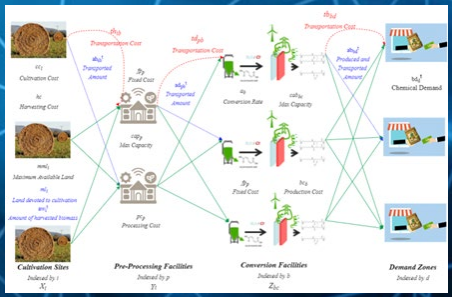
Contact: jpm21@iastate.edu

IOWA STATE UNIVERSITY

Industrial and Manufacturing Systems Engineering

Supply Chain Design for Chemicals from Biomass

Motahareh Kashanian and Dr. Sarah M. Ryan



Motahareh "Motina" Kashanian

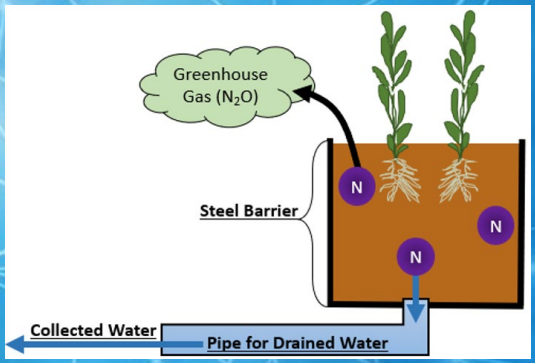
Industrial Engineering

Faculty Advisor: Sarah Ryan

Contact motinaa@iastate.edu

Poster Session

Poster Title: "Soil Block Mesocosms: A New Approach for Quantifying Nitrate Leaching and Nitrous Oxide Emissions from Maize Cropping Systems"



Holly Loper
Microbiology

Faculty Advisor:
Steven Hall,
Biogeochemistry Lab

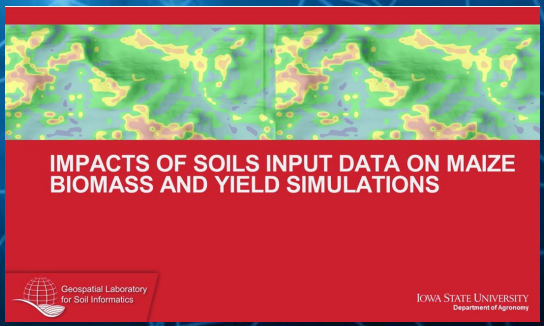
Contact: hjloper@iastate.edu

Oral Session 1

Meyer Bohn
Agronomy

Faculty Advisor:
Bradley Miller, Geospatial Lab for Soil Informatics

Contact:
mpbohn@iastate.edu



IOWA STATE UNIVERSITY
Agricultural and Biosystems Engineering

DataFEWSion Annual Symposium
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Kelly Nascimento Thompson, Daryl Herzmann, Brian Gelder & Richard Cruse.

The Daily Erosion Project Going Global: Analyzing Distinct Precipitation Datasets

KEYWORDS: Precipitation, modeling, soil erosion, WEPP.

DAILY EROSION PROJECT

Major Professors:
Brian Gelder & Richard Cruse

Projected Graduation: 2024

Email: kellynay@iastate.edu

Acknowledgements: Iowa Nutrient Research Center, Farm Service Agency, and Daily Erosion Project

Richard Magala
Forestry
NREM

Faculty Advisor:
Lisa Schulte-Moore, Landscape Ecology and Sustainable Ecosystem Management Lab

Contact: rmagala@iastate.edu

Ecosystem service modelling for a new education paradigm: Role of PEWI as a digital game-based learning tool.

Oral Session 1

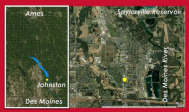
Loulou Dickey

Environmental Engineering

Faculty Advisor:
Chris Rehmann

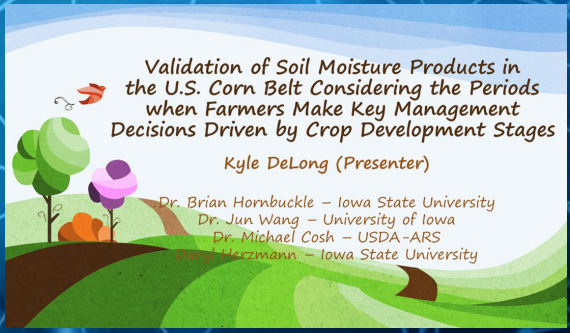
Contact:
lcdickey@iastate.edu

Stormwater management: opportunities and challenges



Iowa State University
Department of Civil, Construction and Environmental Engineering

Oral Session 2



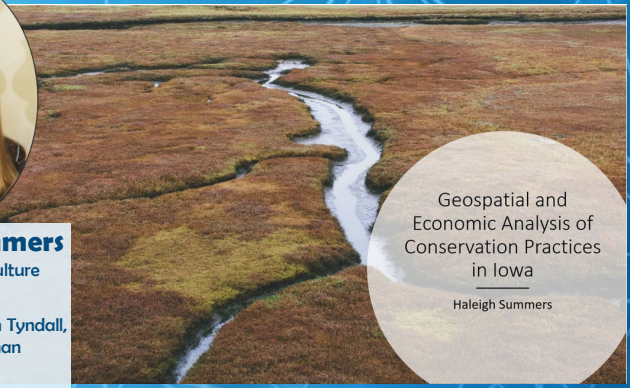
Kyle DeLong

Agricultural Meteorology

Faculty Advisor:
Brian Hornbuckle

Contact:
delon1kt@iastate.edu

Oral Session 2



Geospatial and Economic Analysis of Conservation Practices in Iowa

Haleigh Summers

Haleigh Summers

Sustainable Agriculture

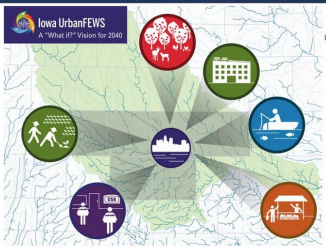
NREM

Faculty Advisors: John Tyndall, Emily Zimmerman

Contact:
hsummersr@iastate.edu

Food system modeling with LCA gives us the opportunity to ask "what if" questions: What if more food was produced locally?

- Landscape includes more table food (for human consumption)
- 67.5% of local food is sold directly to consumers



- Approximately 50% of food is produced within the Metro
- Food is transported within the Metro

Tiffanie Stone

Environmental Science

Faculty Advisor:
Jan Thompson

Contact:
tstone@iastate.edu

Thanks to our Advisory Board

Brian Campbell, Iowa Environmental Council

Tom D'Alfonso, Agmine

Frank Dohleman, Climate, Agriculture and Partnership Solutions Consulting

Greg Doonan, Syngenta

Ross Evelsizer, Northeast Iowa Resource Conservation & Development

Kara Hobart, General Mills

Hassan Loutfi, Roeslein Alternative Energy

Brent Myers, Corteva Agriscience

Shawn Richmond, Iowa Nutrient Research & Education Council

Keith Schilling, State Geologist - Iowa

Akash Vidyadharan, Infralytics

Thanks to Sponsors

National Science Foundation
Grant No. DGE-1828942

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