

UrbanFEWS in the News

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Report from the 2022 Growing Sustainable Communities Conference in Dubuque, Iowa

The Growing Sustainable Communities Conference was back to being in person this year in Dubuque, Iowa. Many community presentations are related to the research we are conducting in the Iowa UrbanFEWS project. Water quality and green infrastructure for storm-water management were recurring topics.

For example, personnel in Webster County are developing a Rivers' Edge Discovery Center in Fort Dodge with a regional vision for tourism and reconstructed wetlands. Personnel with the Market District I in Downtown Des Moines are including bioretention cells along their new roads. Officials with Polk County and the

Des Moines Metropolitan Planning Organization

presented their Rain Campaign, encouraging private homeowners to include conservation measures on their own properties, including rain barrels, rain gardens, and pervious pavers.

Chief Scientific Officer Noah Wilson-Rich, Ph.D., founder of The Best Bee Company (<https://best-bees.com/about/>) gave an inspiring keynote presentation. His company installs and manages urban beehives on corporate and institutional rooftops and community gardens in return for the ability to collect and share data about those bees. The roof or garden owners can keep the honey.

Another important project is ReLeaf Cedar Rapids, which was developed in Cedar Rapids after the

devastating derecho of 2020 to replant city trees in collaboration with Trees Forever.

Another keynote was given by Ana Garcia Doyle of the One Earth Collective, a community environmental activist group operating out of Oak Park, Illinois and conducting environmental programs across the US involving youth and residents. They are most known for their film festival. And finally, the Midwest Climate Collaboration aims to connect Midwestern academic institutions and community stakeholders focused on climate change impact in the Midwest, a group we will certainly reach out to for future collaborations.

Des Moines Climate Adaption Plan

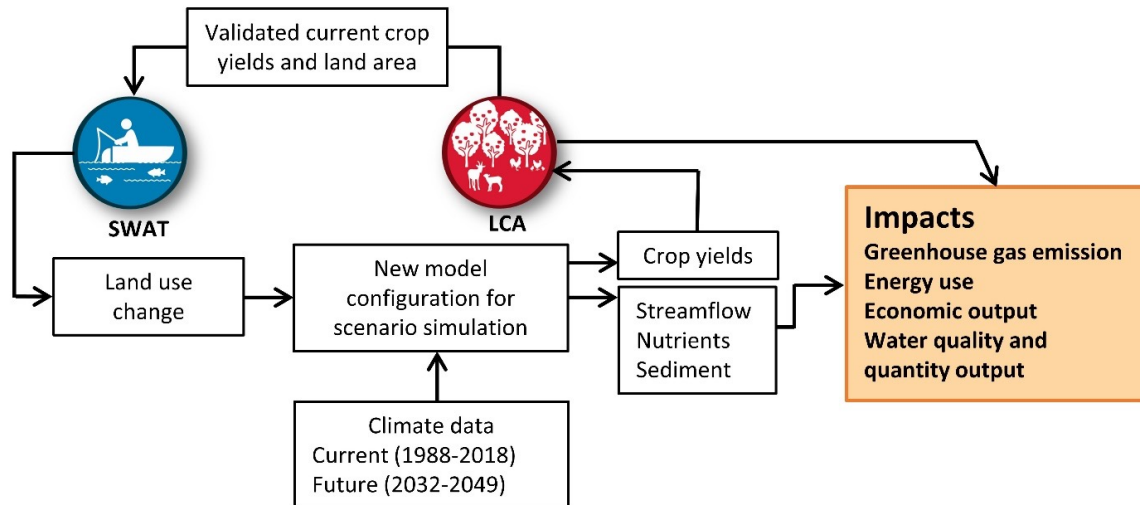
Officials with the City of Des Moines Sustainability Program have undertaken a large climate adaptation planning effort called "ADAPT DSM." They have assembled a Core Project Team, a Technical Advisory Group and a Steering Committee to provide input and direction to their process. They have conducted a couple of surveys and also

hosted a Project Open House to solicit input from residents and stakeholders to their planning process.

Members of the the Iowa UrbanFEWS team are supporting this effort through participation in their working groups. They plan to evaluate seven areas (energy use and resources, buildings and infrastructure,

transportation and land use, food systems and security, waste management and reduction, climate preparedness and resilience, and natural systems and water resources through the lenses of equity, innovation, economic benefits and human health. Stay tuned for results from their ongoing work!

Table Food Yields in SWAT



The USDA provides important information about land area/crop yields for many crops. However, yield data for fruits and vegetables produced in Iowa are not available, due to relatively low production levels compared to the major crops grown on the majority of the landscape (e.g., corn and soybeans).

This makes it difficult to develop assumptions for average fruit and vegetable yields using publicly-available datasets. Estimating potential yields under different possible future climate conditions is

even more challenging. One way to generate data for various crop types is by using simulation models. For example, the spatially-oriented Soil and Water Assessment Tool (SWAT) model can be used to generate contemporary water balance, water quality and crop yields for current climate conditions and potential climate trends in the future.

In addition to this water balance and water quality information, greenhouse gas emissions and economic viability should also be considered in designing more sustainable food

systems. To accomplish this, we used life cycle analysis (LCA) modeling techniques based on the information generated by SWAT (see figure below) to evaluate effects of increasing table food production for 30 selected fruits and vegetables that could be grown in central Iowa.

We observed yield increases for 18 of those crops (e.g., cucumbers), yield decreases for three (e.g., lettuce), and variable yield changes for the remaining nine (e.g., onions) depending on specific changes in climate predictions.

Featured Story:

International Research Experience for ISU Graduate Student

Vishal Muralidharan (Ph.D. student, member of the Iowa UrbanFEWS project) was part of a cohort of researchers visiting the National University of Singapore (NUS) for a month at the end of Summer 2022.

Vishal's research is on modeling the thermal impact of built forms in the urban environment. Nearby trees can influence the amount of heat buildings gain by shading them from solar radiation. They also affect the energy exchange during evapotranspiration, when water is transferred from the soil and plant. He also works on modeling these ef-

fects when a layer of greenery covers a building wall (green façade).

In 2018 Singapore had approximately 100 hectares of skyscraper greenery; this number is set to double by the end of the decade. Its green spaces cover up to 46.5% of Singapore's land cover, meeting the 'garden city' vision the city-state had incepted back in 1967. Singapore academics are pioneers in the experimentation and modeling of the effects of greenery and have long been quantifying their impact on the built environment.

This opportunity enabled Vishal to interact with NUS researchers and

scientists and exposed him to international research collaborations, which will help him carry on his research back home at Iowa State University.



The Summer and Fall of Urban Agriculture Tours

In July and August members of the UNREAL (Urban Natural Resources, Ecosystems and Landscapes) Lab (directed by Jan Thompson) took two field trips to visit urban farms and gardens in and around Des Moines. We enjoyed several

stops on each trip and were able to visit the Urban Dogpatch Farm, the Franklin Community Food Garden (Figure 1), the Iowa Food Coop (Figure 2), Gateway Market (Figure 3) and Sweet Tooth Farm (Figure 4). Members of the UrbanFEWS

Team also participated in a Practical Farmers of Iowa Field Day at the Lutheran Services of Iowa Global Greens farm in West Des Moines. Urban food production in our study area is a growing thing!



Figure 1
Franklin Community Garden



Figure 2
Sweet Tooth Farm with Monika O.



Figure 3
Local produce at Gateway Market



Figure 4
The Iowa Food Coop

Norman Borlaug Lecture featuring 2022 World Food Prize Laureate Dr. Cynthia Rosenzweig

“I am honored to receive the World Food Prize this year, as food systems are emerging at the forefront of climate change action. Climate change cannot be restrained without attention to food system emissions, and food security for all cannot be provided without resilience to increasing climate extremes,” states Dr. Cynthia Rosenzweig.

On October 20, 2022, the World Food Prize Foundation awarded Dr. Rosenzweig for her seminal contributions to understanding and predicting the impact of the interaction between the climate and food systems at the Iowa State Capitol building.

In her acceptance speech, Dr.

Rosenzweig urges the importance of mitigating and adapting to climate and food security threats.

“As we move into this crucial decade of action on climate change, food needs to be ‘at the table.’ The World Food Prize is doing a tremendous service in making sure food is indeed prominent in global gatherings such as the 27th Conference of Parties next month in Egypt,” said Dr. Rosenzweig.

Dr. Rosenzweig started her career as a farmer but is now a Senior Research Scientist and head of the Climate Impacts Group at NASA’s Goddard Institute for Space Studies (GISS); she is the 52nd Laureate of the World food prize. Through designing and leading rigorous,

collaborative observational and modeling research, she provided the evidence used by thousands of decision-makers in more than 90 countries to both mitigate and adapt to climate change in local, national, and global food systems. To read the full story, see the article “NASA Scientist Cynthia Rosenzweig Receives the 2022 World Food Prize” article from October 20, 2022 (worldfoodprize.org).

