



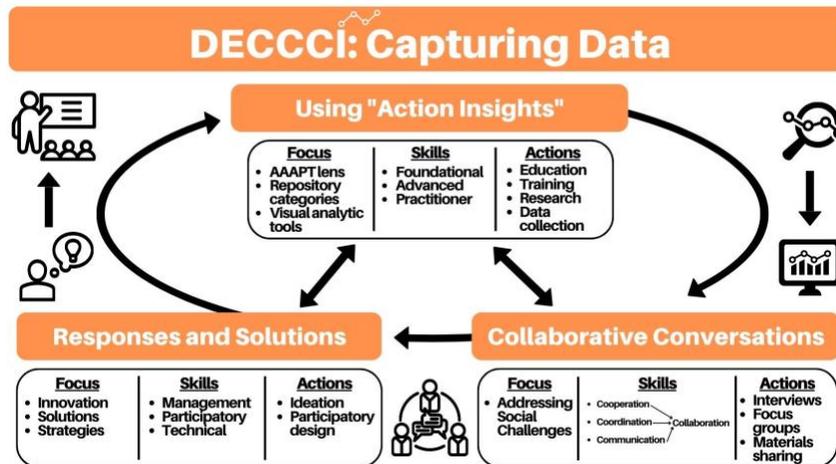
January Summary

Overview

January 2023 marks the beginning of Quarter 2 (January, February, March) of the **Delaware Extension Climate Change Coordination Initiative (DECCCI)**. This summary offers: 1) the projected research objectives for the quarter, 2) recent research activities and 3) brief outline of issues emerging with respect to climate change and education.

Quarter 2 Objectives

- Data (who, what, where, when, why, how) is geographically located (GIS mapping)
- Ongoing content analysis of documents (linguistic and text analyses)
- Social Network mapping of key actors, stakeholders, partners (object relations)
- Research and design of “UD Extension Assessment” analysis tool
- Continued in-depth key informant interviews
- Facilitation of “collaborative conversations” meetings
- Education and research training workshops/seminars
- Update and adjustment of new tasks and activities
- Monthly participatory update meetings



January Areas of Focus

Delaware Ag Week

Delaware Agriculture Week was held in person at the Delaware State Fair Grounds, in Harrington, Delaware from Monday, Jan. 9, to Thursday, Jan.12, 2023. Ag Week events were organized through a collaboration between UD Cooperative Extension, Delaware State Cooperative Extension and the Delaware

Department of Agriculture. Presentations were offered by Extension Specialists, agricultural experts, farmer representatives, state and local government personnel, commercial growers and industry representatives. Session topics included innovation and practice in agronomy, fruits and vegetables, woodland management, animal science, IPM, till and no-till practices, poultry and Avian Flu, AMR in beef and small ruminants, Smart Ag, etc. Commercial vendors, financial institutions, insurance representatives, community health and wellness, and other non-profit representatives also were in attendance. Sponsors of the event can be found here: <https://sites.udel.edu/delawareagweek/sponsors/>)

Members of the DECCCI team collected written materials and held interviews with farmers, state agricultural representatives, commercial stakeholders and UD Extension personnel.



A DECCCI informational flyer was distributed and people were asked to respond to the “4 Questions Poll”. As with the two previous polls (CANR festival and UD Extension) Ag Week respondents revealed a pattern of: 1) learning about climate change from the news and media, 2) thinking that climate change is either, “not proven” or viewed as “changing weather patterns” 3) feelings about climate produce “anxiety”, “frustration” or “depression” and finally 4) actions related to climate change are focused on “doing my best to recycle”, “buying an electric car”, “using smart ag practices” or “nothing”.

Observations from interviews:

- Growers expressed a conflict between organic agricultural practices and climate change mitigation practices and viewed this as a real challenge. The practices mentioned are primarily related to weed control and tillage. Reduced tillage and no-till are promoted as climate change mitigation practices since reducing tillage promotes storage of carbon in the soil. However, large scale no-till is dependent on herbicide use and is therefore not compatible with organic production practices. This is an important pivotal issue.

Many organic growers need to use tillage to control weeds. Nearly all vegetable farms also use tillage for weed control because herbicide options are more limited or the crop requires major soil disruption for establishment (i.e. anything grown on raised beds, anything grown using paper or plastic mulched beds) or harvest (potatoes, sweet potatoes, carrots).

- Concerns about nutrient management. The intersection of nutrient management and climate change mitigation is with nitrogen fertilizer management to reduce nitrous oxide emissions. There is growing anxiety around nutrient management because of fear of government control and “global elites” trying to restrict fertilizer use in order to control food production. The presentation of “data” from the news source “Epoch Times” was offered as an example of information about “government control” and thus animosity towards state attempts to regulate. One informant mentioned that new discussions of nutrient management among farmers nationally because of the nitrous oxide emissions

information to diverse communities. It is offered that the Cooperative Extension system is a natural vehicle to increase adult education and action on climate change. Extension educators occupy a unique position as liaisons between “information generators” such as land-grant universities and “information users” such as farmers and community members.

This positioning can help facilitate flexible, issue-based discussions on climate change. UD Extension, for example has a cadre of specialists who can work with stakeholders to provide information on how extreme weather and climate variability are affecting operations (from extreme rainfall to drought), and practical tools to increase resiliency. However, from climate change conversations, interviews and polls, it is clear that not only across the US, but across Delaware communities, people are particularly polarized, with a great deal of misinformation and uncertainty.

“Experience”, Education and Changing Perceptions

Interviews, polls and group conversations with members of diverse DE communities, reveal that they “feel” extremely anxious, sad, concerned and frustrated about climate change and those feelings are primarily informed by information shared in “the media”. Some individuals mentioned learning about climate change in school, or from Extension specialists, however specific climate change information was not disseminated through Extension. In addition, it was clear that beliefs about climate change are often strongly connected to political identities.

Recent 2022 studies¹ however, have observed, that although the media outlets casting doubt on climate science can exacerbate dismissive climate beliefs in the public, other communications can counteract negative media effects and change the narrative on climate change by amplifying personal stories and encouraging people to discuss their climate change views with others, especially with family and friends.

New studies are showing the power of sharing perceived experience with climate change (personal and vicarious) to changing social norms, new interpersonal communications, and changes in the media. Clearly, personalizing and localizing people’s lived experience of the impact of erratic and extremes in weather patterns, as well as articulating the perceived norm that most people care about the issue and support taking action, may be important information and communication strategies.

Personalizing and localizing communication about the impact of climate change on friends, family, neighbors and colleagues, can increase perceptions that others have experienced its effects, and strengthen normative beliefs that other people care about the issue. Together, these strategies may encourage people to change their minds about climate change in a positive direction.

Thus, Extension can offer place-based education strategies that communicate the local effects of climate change in ways that can be directly experienced and these may be especially effective when paired with trusted local Extension agents and specialists. Extension can also hold facilitated dialogues about feelings and actions with respect to climate change that may not have had a previous platform. With extreme weather events increasing in frequency and severity, it may be helpful to amplify personal impact stories, which have been shown to be effective in changing people’s opinions.

¹ Ballew, M. T., Marlon, J. R., Goldberg, M. H., Maibach, E. W., Rosenthal, S. A., Aiken, E., & Leiserowitz, A. (2022). Changing minds about global warming: vicarious experience predicts self-reported opinion change in the USA. *Climatic Change*, 173(3), 1-25.) see: <https://climatecommunication.yale.edu/publications/experience-with-global-warming-is-changing-peoples-minds-about-it/> (retrieved 1/22/23)

Programing focused on “making sense” of personal and shared experience could serve as the structure for core content and help outline learning objectives. Given the diversity of Delaware communities, educational programming would remain flexible and adaptable for specific community needs. Areas of Extension educational focus could include:

- How to introduce and discuss the physical mechanisms that underlie Earth’s change climate and the drivers of uncertainty in the future climate projections.
- Keys to recognizing the impact of global climate and local weather changes on Earth ecosystems and agriculture
- Recognize the impact and relationship of human patterns of interaction, cultures and societies to climate change, including historical, socio-political, economic, religious and scientific perspectives
- Understand the relationship of “mitigation” and “adaptation” perspectives on “solutioning”
- Ability to synthesize and communicate the complexities and uncertainties of social change and possible solutions to climate change.

Appendices

Appendix 1

2023 Delaware Agriculture Week Exhibitors

(For **Sponsors** see: <https://sites.udel.edu/delawareagweek/sponsors/>)

- *A.C. Schultes of Delaware, Inc.*
- *Agriteer*
- *AgroLab, Inc. — A Matrix Sciences Company*
- *Amick Farms LLC*
- *B W Fusion*
- *Bayhealth Cancer Center*
- *Crow Insurance Agency, Inc.*
- *Daisey Insurance Inc.*
- *Delaware Department of Agriculture-Communications and Marketing*
- *Delaware Department of Agriculture-Farm to School Program*
- *Delaware Department of Agriculture-Pesticide Section*
- *Delaware Department of Agriculture-Plant Industries*
- *Delaware Farm Bureau*
- *Delaware Produce Safety Rule*
- *Delaware Soybean Board*
- *Delaware State University Small Farms Program*
- *Delmarva Chicken Association*
- *Eastern Shore Poultry Services*
- *Elite Lubricants, LLC*
- *Energize Delaware Farms*
- *Farmsite Technologies*
- *FieldWatch Inc.*
- *FMC*
- *Fulton Bank*
- *Garey Ag Solutions*
- *Growers Mineral, Corp.*
- *Growmark FS, LLC*

- *Hoffman Irrigation, LLC*
- *Hooper, Inc.*
- *Horizon Farm Credit*
- *Hubner Seeds*
- *King Crop Insurance, Inc.*
- *King's AgriSeeds*
- *LeafFilter Gutter Protection*
- *M & T Bank*
- *Mid Atlantic Soybean Association Inc.*
- *Mike Garner Hay & Livestock Equipment*
- *Mountaire Farms*
- *Nagel Farm Service & Crop Insurance*
- *Nutrient Management Program*
- *Paradise Energy Solutions*
- *Pep-Up and TriGas & Oil*
- *Perdue AgriBusiness LLC*
- *Pioneer*
- *Pivot Bio*
- *Professional Leasing, Inc.*
- *Revere Seed*
- *Schaeffer's Oil*
- *Shore Drip Irrigation/Vincent Farms*
- *SMW Sales LLC*
- *Society of St. Andrew*
- *Solair – Green Energy Advisors*
- *Stine Seed/Venture Farms*
- *Stokes Seeds Inc.*
- *Sunrise Solar*
- *Sussex Conservation District*
- *Sussex Irrigation, LLC*
- *Syngenta*
- *Taylor & Messick, Inc.*
- *The Delmarva Farmer*
- *The IR-4 Project*
- *The Land Group*
- *Tidewater Seed*
- *Timac Agro USA Inc.*
- *Tucker Mechanical Service Inc.*
- *USDA-Farm Service Agency*
- *USDA Natural Resources Conservation Service (NRCS)*
- *U.S. Dept. of Labor, Wage and Hour Division*
- *University of Delaware Cooperative Extension*
- *Walls Irrigation*
- *Weller Insurance*

Appendix 2 Links to Delaware Related Education Actors

Level	Organization Name	Description
Macro		
National		
	American Society of Adaptation Professionals (ASAP)	Professional home for people who are preparing for climate impacts in their jobs, in their communities, and in their fields of practice
	National Academies (NASEM)	Private, nonprofit institutions that provide expert advice on some of the most pressing challenges facing the nation and world; work helps shape sound policies, inform public opinion, and advance the pursuit of science, engineering, and medicine
	National Coalition for Food and Agriculture Research (NCFAR)	A nonprofit, nonpartisan, consensus-based, and customer-led coalition that brings together food, agriculture, nutrition, conservation, and natural resource stakeholders to serve as a forum and unified voice supporting increased federal investment in USDA Research, Education, and Economics
	National Extension Climate Initiative (NECI)	Initiative formed in 2019 by Extension professionals across the country that serves to link climate-related education and research across Extension program areas
	Thomas A. Lyson Center for Civic Agriculture and Food Systems	A growing number/network of communities throughout North America committed to improving the health and well-being of their residents, the diverse participation in equitable food systems, the long-term stewardship of local natural resources, and the viability of local and regionally oriented food and farm businesses
Mid		
State		
	Delaware Association of Conservation Districts (DACD)	Coordinate assistance from all available sources — public and private, local, state and federal — in an effort to develop locally driven solutions to natural resource concerns in Delaware
	Delaware Center for the Inland Bays (DCIB)	Oversees the implementation of the Comprehensive Conservation and Management Plan for Delaware's Inland Bays (CCMP) and 2012 Addendum and promotes the wise use and enhancement of the Inland Bays watershed by conducting public outreach and education, developing and implementing restoration projects, encouraging scientific inquiry, sponsoring needed research, and establishing a long-term process for the protection and preservation of the watershed
	Delaware Department of Natural Resources and Control (DNREC)	Primary body concerned with the governance of public land, natural resources, and environmental regulations for the state of Delaware
	Delaware Environmental Institute (DENIN)	Provide academic, government, nonprofit, and industrial partners broad access to experts from multiple disciplines in a collaborative effort to: advance environmental science, promote environmental education, and devise innovative strategies for environmental preservation and remediation
	Delaware EPSCoR	Works with students and educators to broaden interest and participation in the STEM fields: science, technology, engineering, and math; goal is to bring the excitement of

		the STEM fields to new audiences and to prepare the workforce of the future for careers in these fields
	Delaware Farm Bureau (DEFB)	Promote and protect Delaware agriculture through education and advocacy to ensure a quality of life for farmers and their families and their consumers
	Delaware Nature Society (DNS)	Connects people with the natural world to improve the environment through education, conservation, and advocacy
	Delaware Sea Grant (DESG)	Help Delaware communities wisely use, manage, and conserve the state's valuable coastal resources by fostering sustainable coastal economies, developing resilience to coastal hazards, and preparing the next generation of coastal leaders
	Delaware Sierra Club (DCSC)	Volunteer-run grassroots organization working to protect Delaware's air quality and water quality and support legislation and policies to reduce the negative impacts from climate change on those precious resources now and in the future
	Partnership for the Delaware Estuary	Nonprofit organization dedicated to connecting people, science, and nature for a healthy Delaware River and Bay
	The Nature Conservancy in Delaware (TNC)	Work with government agencies, private corporations, conservation organizations and members to conserve the places on which people and wildlife depend; resulted in the conservation of more than 30,000 acres across Delaware since 1990
	University of Delaware (UD)	Public land-grant research university located in Newark, Delaware
	University of Delaware Cooperative Extension (UDCE)	Provides university knowledge, research, and resources to the people of Delaware
8Micro		
County		
	Kent County Conservation District (KCS)	A governmental sub-division of the State of Delaware authorized by the state legislation in Title 7 of the Delaware Code, Chapter 39 and responsible for conservation work within Kent County
	Kent County Extension Office	One of three Cooperative Extension Offices throughout the state of Delaware; services Kent County in particular
	New Castle County Conservation District (NCCD)	Assist private landowners by getting conservation on the ground where it's needed
	New Castle County Extension Office	One of three Cooperative Extension Offices throughout the state of Delaware; services New Castle County in particular
	Sussex County Conservation District (SCD)	Provide technical guidance and financial assistance to enhance, maintain, protect, and improve land and water resources
	Sussex County Extension Office	One of three Cooperative Extension Offices throughout the state of Delaware; services Sussex County in particular
Community		
	Earth, Ocean, and Environment Club (EOEC)	UD environment club that aims to educate members about the natural world through planned events, hands-on experiences, field trips, and other related activities
	Epsilon Eta (EH)	UD environmental fraternity that aims to extend resources for students interested in pursuing environmental careers,

		and to foster a community of like-minded students seeking to make positive change for the environment and all that inhabit it
	Students for the Environment (S4E)	UD's oldest and largest environmental club that seeks to educate the campus community about how they can best protect the natural world around them, as well as promote awareness of the impacts that students, faculty, staff have on the environment
	The Environmental Justice Project (TEJP)	UD club that educates and raises awareness to the UD community about Environmental Justice (EJ) issues and what students/members can do to assist EJ communities to reduce their vulnerabilities and build resiliency into the future
	University of Delaware Biden School of Public Policy & Administration	UD academic college that creates and uses interdisciplinary nonpartisan research and empirically-based analysis to inform effective decision-making and policy and to improve leadership and administration
	University of Delaware College of Earth, Ocean, and Environment (CEOE)	UD academic college dedicated to advancing the understanding of our planet's natural systems, from plate tectonics and turbulent hurricanes to historic coastal estuaries and the deepest reaches of the ocean
	University of Delaware Gerard J. Mangone Climate Change Science and Policy Hub	Promotes collaboration and brings together students, faculty, stakeholders and specialists to position the University of Delaware as a national leader in climate change education, research, and innovation
	University of Delaware Disaster Research Center (DRC)	Committed to advancing the state of the art in disaster research and its scientifically guided practice; educating the next generation of disaster science scholars and informed practitioners in the fields of disaster mitigation, preparedness, response, and recovery; and creating, gathering, and disseminating disaster knowledge in a dynamic and responsive way
	University of Delaware Sustainability Council (UDSC)	Incorporates sustainability principles into academia, campus operations, and community engagement at the University of Delaware