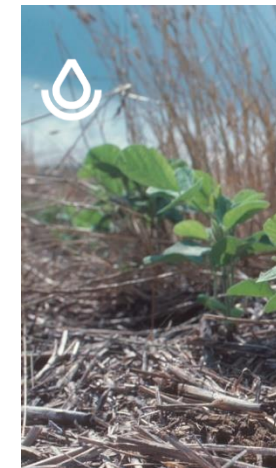




United States Department of Agriculture



Climate Smart Ag and Forestry

Dana Ashford-Kornburger, NRCS National Climate Coordinator

March 21, 2023 – Nebraska Association of Resources Districts

Natural
Resources
Conservation
Service

nrcs.usda.gov/

Outline



Climate Smart Ag and Forestry



Mitigation



Adaptation



Climate Resources

Climate-Smart Ag and Forestry

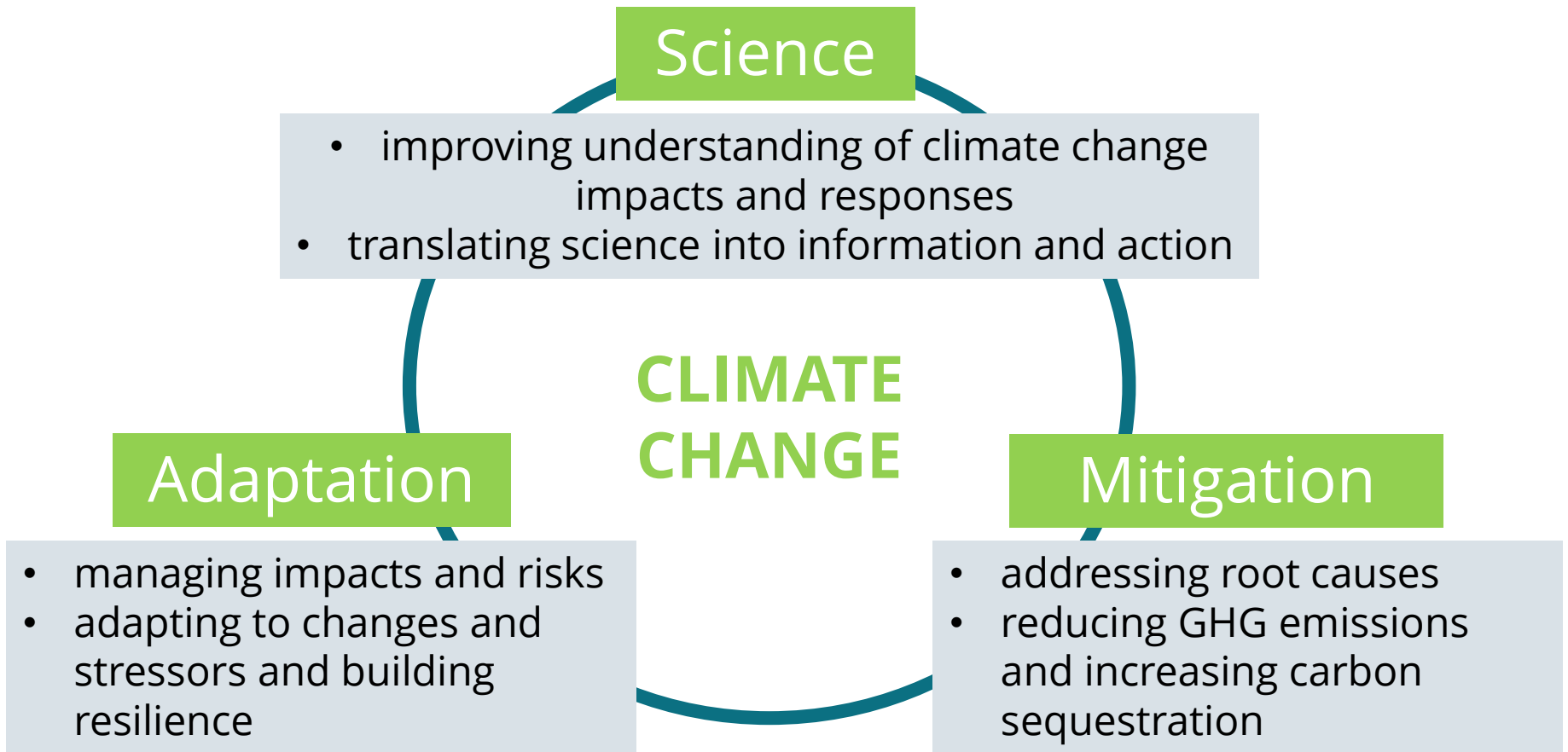


Climate-smart agriculture and forestry (CSAF) is an integrated approach that enables farmers, ranchers, and forest landowners to respond to climate change by reducing or removing GHG emissions (**mitigation**) and adapting and building resilience (**adaptation**), while sustainably increasing agricultural productivity and incomes.

While **mitigation** addresses the causes of climate change, **adaptation and resilience** address the consequences of climate change.



Role of NRCS

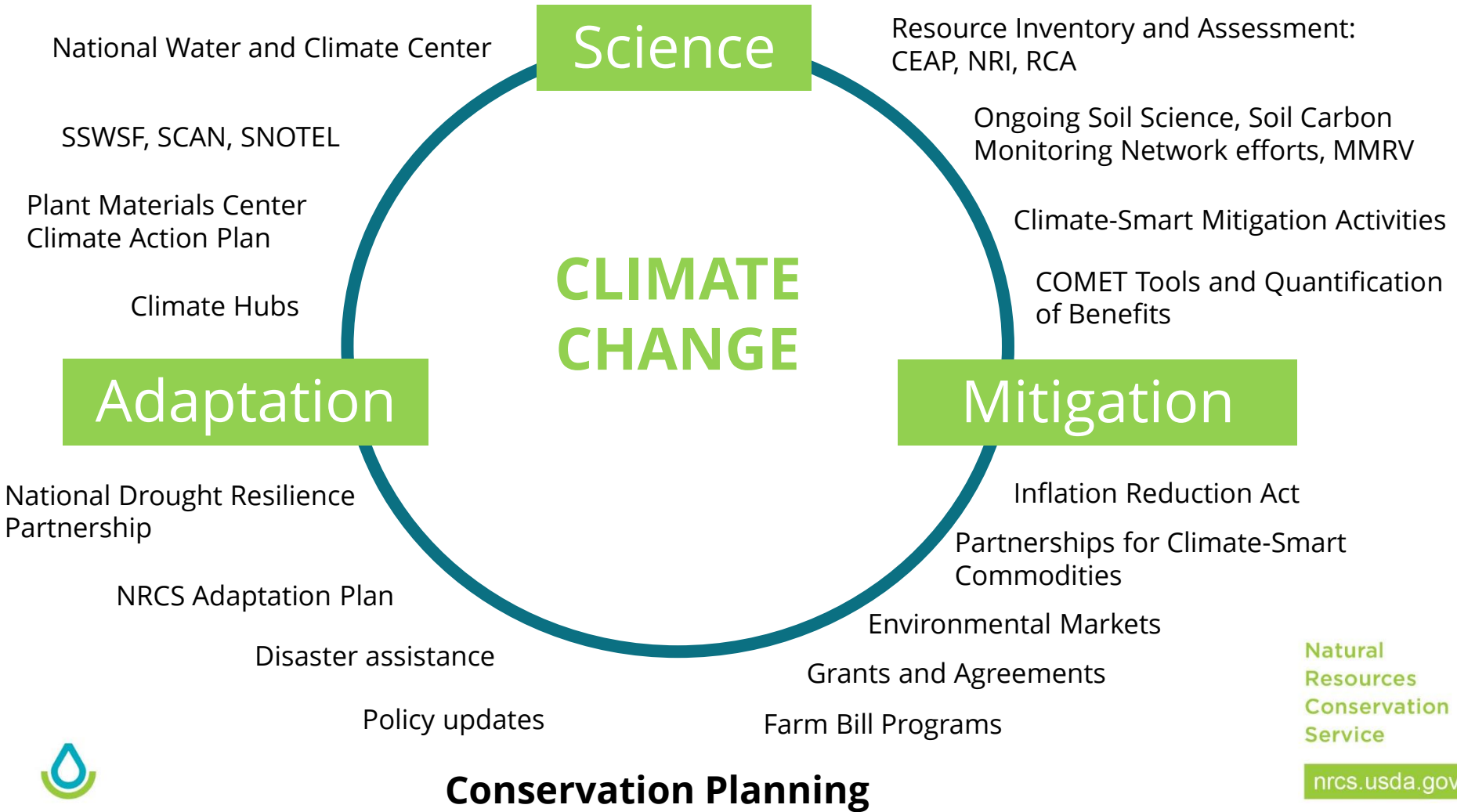


Natural
Resources
Conservation
Service

nrcs.usda.gov/

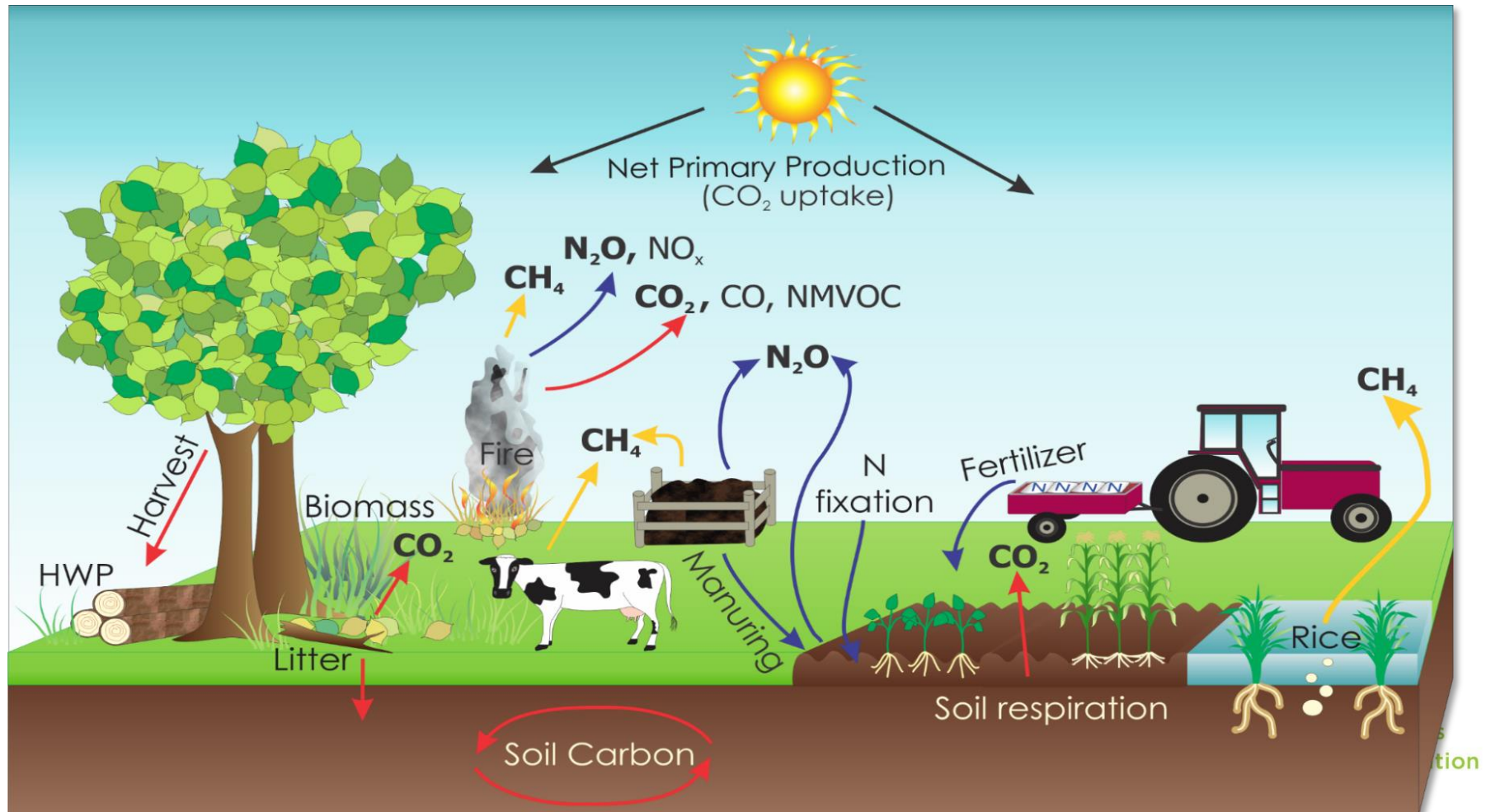


NRCS is already integrating climate ...and will continue to do more



Working Lands Agriculture and the Atmosphere: Three Main GHGs and Several Intervention Opportunities

Carbon Dioxide (CO_2), Nitrous Oxide (N_2O), and Methane (CH_4)





United States Department of Agriculture



Mitigation



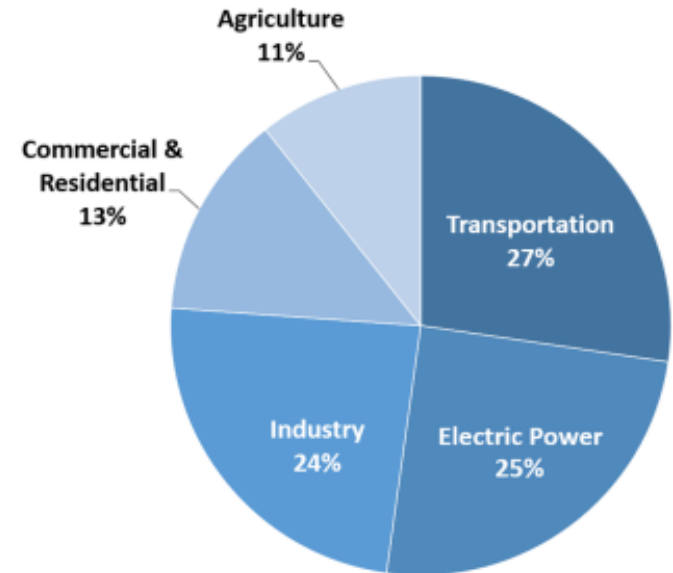
Natural
Resources
Conservation
Service

nrcs.usda.gov/

Why Agricultural Mitigation?

- 17% of total global GHG emissions (2018)
- 11% of total U.S. GHG emissions (2020)
 - 42% of methane emissions
 - 80% of nitrous oxide emissions
- The U.S. aims to achieve a **50-52% reduction from 2005 levels in economy-wide net GHG pollution in 2030** – this will require all sectors to take actions.

Sources of U.S. Greenhouse Gas Emissions in 2020



Note: All emission estimates from the [Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2020](#).

Natural
Resources
Conservation
Service

nrcs.usda.gov/



Inflation Reduction Act (IRA)



- Provides NRCS with \$19.5 billion in **additional** funds for its **existing** conservation programs – huge opportunity to expand our mitigation work
- Directs NRCS to use the additional funds specifically for **climate change mitigation**
 - FY23 NRCS climate-smart mitigation activities: nrcs.usda.gov/mitigation-activities.pdf
 - IRA funding can also be used for necessary facilitating practices
- Conservation systems can also provide other benefits besides climate change mitigation

CSAF Mitigation Activity List



Natural Resources Conservation Service

Climate-Smart Agriculture and Forestry (CSAF) Mitigation Activities List^[1] FY2023



Climate Change Mitigation Practice Categories	Code	Conservation Practice Standard Name ^[2] (units)	CSP Enhancement Code	Conservation Stewardship Program (CSP) Bundle and Enhancement Activity
			B000BFF1	Buffer Bundle#1*
			B000CPL24	Cropland soil health management system*
			B000CPL25	Climate smart advanced soil health*
	327	Conservation Cover (acres)	E327A	Conservation cover for pollinators and beneficial insects
			E327B	Establish Monarch butterfly habitat
	328	Conservation Crop Rotation (acres)	E328A	Resource conserving crop rotation
			E328B	Improved resource conserving crop rotation
			E328E	Soil health crop rotation
			E328F	Modifications to improve soil health and increase soil organic matter
			E328G	Crop rotation on recently converted CRP grass/legume cover for soil organic matter improvement
			E328N	Intercropping to improve soil health
			E328O	Perennial grain crop conservation rotation

137 activities: 39 practices, 3 bundles, and 95 enhancements

nrcs.usda.gov/mitigation-activities.pdf



Natural
Resources
Conservation
Service

nrcs.usda.gov/



**Innovation into Conservation
Practice Standards**

Evaluation Process

Quantification

State Input



Mitigation Activities



- Result in quantifiable reductions in GHG or increases in carbon sequestration *and* a methodology exists for estimating those mitigation benefits
- Provisional activities added in FY23
- Continued evaluation as science progresses and methods are identified based in literature
- Input mechanism for states and partners to provide feedback on activities that should be considered for evaluation



Mitigation Activity Evaluation Process

- Formalizing evaluation process
- Consistency in quantification methodologies across the USDA / USG
- Improvements to practices and activities to maximize climate mitigation benefits





United States Department of Agriculture



Adaptation



Natural
Resources
Conservation
Service

nrcs.usda.gov/

Climate Change Adaptation Plan

- Framework to ensure tools, business processes, and programs meet the demands of a changing agricultural landscape
- Starting point for further actions based on local impacts, experiences, and knowledge



CLIMATE CHANGE ADAPTATION PLAN

July 2022



Action Areas



7 ACTION AREAS



Increase climate literacy and staffing capacity to deliver assistance that is reflective of climate change



Enhance science, research, and data for understanding, measuring, and tracking climate-related impacts and outcomes



Strengthen partnerships and collaboration to address climate change



Integrate climate information into current business procedures, assessments, and opportunities



Ensure current and future conservation investments are reflective of climate change needs



Assess and address disproportionate climate change impacts on vulnerable communities



Address risks to agency infrastructure



Implementation Work Groups

Climate Literacy

6 months

Sara Thompson
(CPPD)

Vivian Felten
(CT/OUAIP)

Collaboration & Communication

6 months

Matt Walker (ME)

Julie Suhr Pierce
(S&T)

Science Strategic Planning

2 years

Fredrich Schrank (TX)

Loren Unruh (S&T)

Outcomes and Data Management

1 year

Richard Webb (ND)

Mark Xu (SSRA)

Policy Development

4 months

Scott Edwards (MO)

Casey Sheley (CPPD)

Management and Strategy

1 year

Mary Podoll (ND)

Sharif Branham (M&S)



Implementation Work Groups – Highlights

Climate Literacy

Climate SharePoint
Town Halls
State and Center POCs
Environmental Justice

Collaboration & Communication

NRCS Climate
Communication Strategy
NRCS Climate Toolkit

Science Strategic Planning

Climate Change
Adaptation Technical
Team

Outcomes and Data Management

Climate Stressor
Dashboards
Data Governance
Climate Data Networks

Policy Development

Review of existing policy
and procedures

Management & Strategy

Staffing
Fleet resilience
Disaster Preparedness
and FPAC Resiliency
Planning



WG3 – Science Strategic Planning

Climate Change Adaptation Technical Team

- **Dan Dostie (NHQ – Conservation Initiative Coordinator)**
- **Heather Hofman (National Water and Climate Center – Natural Resource Specialist)**
- **Christine Newton (CO - State Conservation Agronomist)**
- **Tammy Swihart (TN - State Grazing Specialist)**
- **Daimon Meeh (NH - Resource Conservationist / State Grazing Specialist)**
- **Joe Alley (MO - State Forester)**
- **Kate Glanville (KS - State Water Quality Specialist)**



Climate Change Adaptation Technical Team

- **Resource Concerns, Planning Criteria, and Assessments**
- **Conservation Practice Standards, Support Documents, and Payment Scenarios**
- **Fact sheets and materials**





Climate Resources

Natural
Resources
Conservation
Service

nrcs.usda.gov/

USDA Climate Efforts

Climate Change Adaptation and USDA

Equity at USDA

Climate Solutions

Partnerships for Climate-Smart Commodities

FAQs

Climate Change Adaptation and USDA

Food and Nutrition Security

More, Better, and New Market Opportunities

Help us improve
USDA.gov?

Producers, ranchers, forest landowners, and communities across the country are facing challenges posed by the effects of climate change. Some of these effects are familiar but occurring more frequently or intensely while others are new and unprecedented.

USDA's [Department-wide Action Plan for Climate Adaptation and Resilience](#) (PDF, 813 KB), released in October 2021, identified mission-wide climate vulnerabilities and cross-cutting actions USDA will take to address these threats.

Climate Vulnerabilities



Decreased agricultural productivity



Threat to water quantity and quality



Disproportionate impacts on vulnerable communities



Shocks due to extreme climate events



Stress on infrastructure and public lands

Climate Change

OFFICE OF THE CHIEF
ECONOMIST

About Us

Newsroom

Agricultural Outlook Forum

Commodity Markets

Economic Analysis

Energy and Environmental Policy

Climate Change

Climate Science and Effects

Climate Change Adaptation

Greenhouse Gas Accounting and Mitigation

Climate Change Science Seminar Series

USDA promotes climate-resilient landscapes and rural economic systems. USDA contributes to climate assessments, analysis of adaptation and mitigation options, cost-benefit analyses, and tools to support agriculture, forests, grazing lands, and rural communities.

The Climate Change Program Office (CCPO) operates within the Office of Energy and Environmental Policy (OEEP) to coordinate agricultural, rural, and forestry-related climate change program and policy issues across USDA. CCPO ensures that USDA is a source of objective, analytical assessments of the effects of climate change and proposed response strategies. This website provides information, reports, and data related to USDA's analysis of these topics.

Learn about the [USDA Climate Hubs](#).

Featured

Climate Science,
Adaptation, and
Effects

Climate Assessments

Greenhouse Gas
Accounting and
Mitigation

<https://www.usda.gov/climate-solutions>

<https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/climate>

<https://www.usda.gov/oce/energy-and-environment/climate>

Resources
Conservation
Service

nrcs.usda.gov/



Climate Quick Reference Guides (State and County Level)

Natural Resources Conservation Service
U.S. DEPARTMENT OF AGRICULTURE
Southwest Climate Hub

Nebraska
Fillmore County
2022

Climate Quick Reference Guide:

Historic Changes 1900 - 2020

- The number of very cold nights has been below average since 1990, indicative of overall winter warming.
- The frequency of extreme precipitation (2 inches or more in one day) events has increased in recent years.
- Nebraska's driest year on record was 2012, when statewide precipitation averaged only 3.7 inches during the summer months, well below the historical average of 9.4 inches.

Projected Changes 2041 - 2070

- Under a higher emissions pathway, historically unprecedented warming is projected during this century.
- Winter and spring precipitation are projected to increase across the state.
- The intensity of droughts is projected to increase - although projections of overall precipitation are uncertain, higher temperatures will increase evaporation rates and decrease soil moisture during the growing season.

Climate and Weather Information Resources

Maps and graphs that show climate changes and projections for your location:

<https://climateguide.org> or <https://www.ncdc.noaa.gov/cag/>

Climate Change Adaptation and Information:

<https://www.climatehubs.usda.gov/>

Current and predicted drought conditions and resources:

<https://www.drought.gov>

NOAA State summaries of past and projected climate by State:

<https://statesummaries.ncics.org>
<https://www.usda.gov/oce/energy-and-environment/climate>

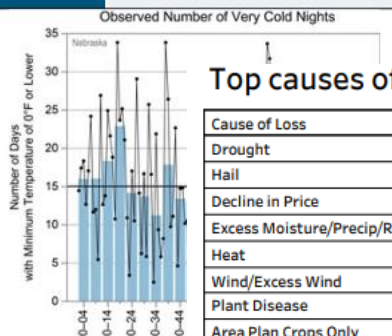


Data for: Fillmore County

Season	Max Temperature (Fahrenheit)			Max Precipitation (inches)		
	Current	Future	Change	Current	Future	Change
Spring	63.1	68.4	5.2	9.6	10.8	1.2
Summer	86.0	93.1	7.1	10.9	10.2	-0.7
Fall	64.8	71.3	6.5	6.5	7.1	0.6
Winter	37.5	43.2	5.8	2.1	2.5	0.4
Annual	62.9	69.0	6.1	29.1	30.6	1.5

<https://swclimatehub.info/data/interactive-maps>

Seasonal and annual data was calculated using mean maximum temperature and precipitation to provide broad seasonal changes at the county scale to aid planning and management amid uncertainty. Current data comes from PRISM Climate Group 30 year normal data for the 1971-2000 time period. Future is derived from the CMIP5 data using the mid-century time period and higher emissions scenario (RCP 8.5).

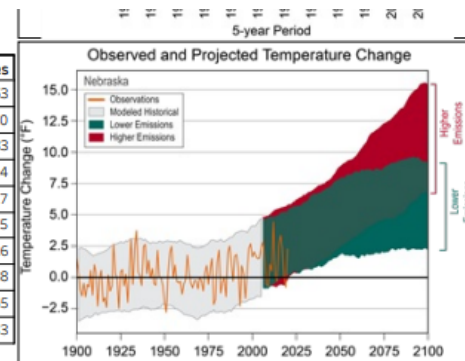


Top causes of crop loss for this county:

Cause of Loss	Indemnity	Acres
Drought	\$30,357,960	291,663
Hail	\$9,105,170	73,090
Decline in Price	\$6,182,310	109,933
Excess Moisture/Precip/Rain	\$3,107,096	54,504
Heat	\$2,674,892	32,447
Wind/Excess Wind	\$2,116,946	17,165
Plant Disease	\$223,580	1,816
Area Plan Crops Only	\$197,047	4,888
Insects	\$161,990	1,165
Flood	\$150,872	1,833

Source: AgRisk Viewer. RMA summary crop loss data by county (1989-2020):

<https://swclimatehub.info/rma-data-viewer.html>



Source for Graphs: <https://statesummaries.ncics.org>

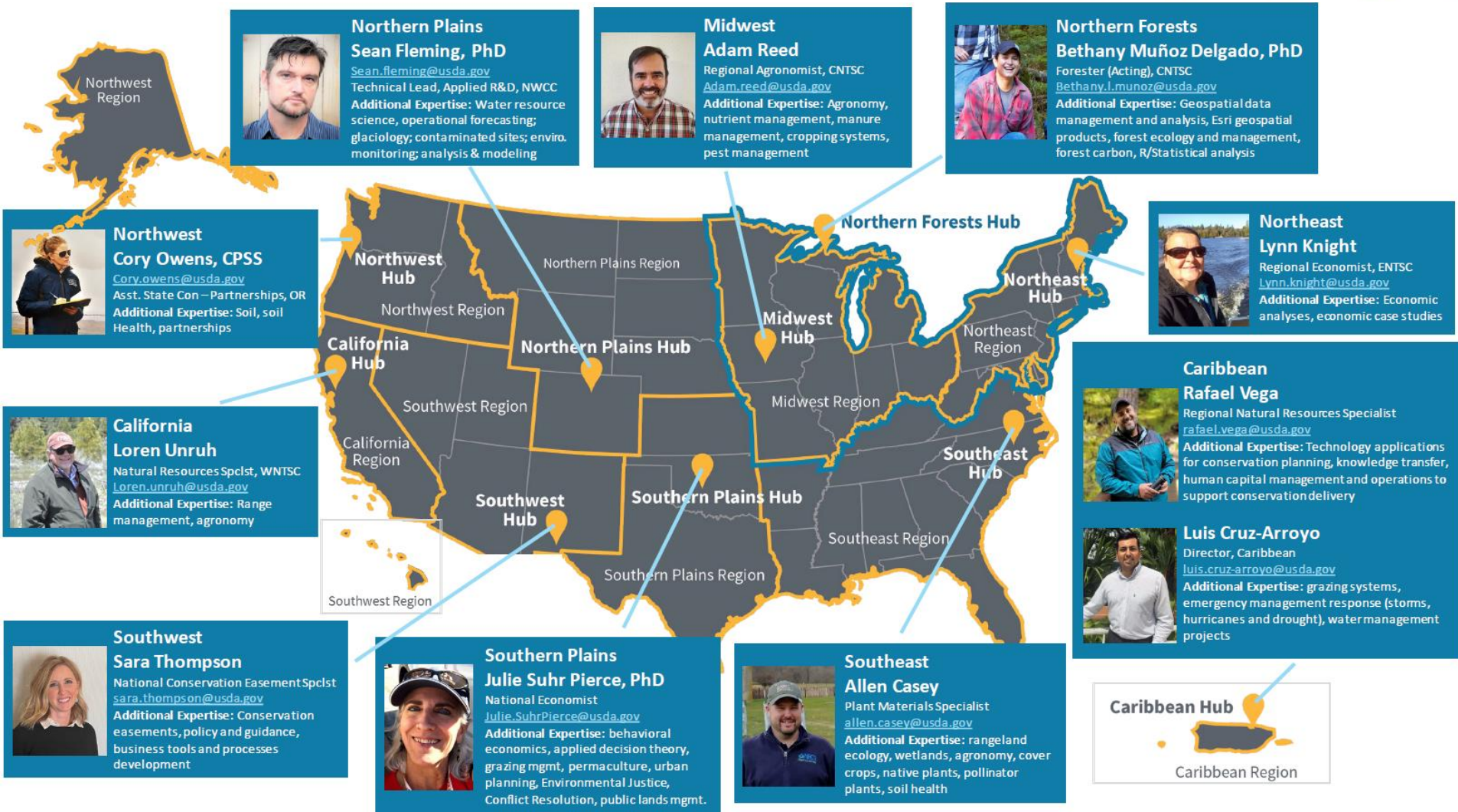


<https://webapps.jornada.nmsu.edu/climate-quick-guides/>

nrcs.usda.gov/



USDA Climate Hubs and NRCS Climate Hub Co-Leads



Q & A / Input



Dana Ashford-Kornburger, National Climate Coordinator
Dana.Ashford@usda.gov

Natural
Resources
Conservation
Service



USDA is an equal opportunity provider, employer, and lender.

nrcs.usda.gov/