



**Announced
February 5, 2014**

**Climate From the Field:
Extension, Outreach, and Engagement**

**April 6, 2017
Windy K. Kelley**

**UW Extension: Weather Variability & Ag Resiliency Specialist
USDA NPCH: Regional Extension Program Coordinator**

Climate information benefiting agriculture & forestry

Vision



Robust & healthy ag production & natural resources under increasing weather variability & a changing climate



Mission

Risk Management:

Weather & climate related

Impacts direct or indirect (+ or -)

Making informed decisions

↑ Resiliency of working lands



Key Approach

Facilitate the transfer of

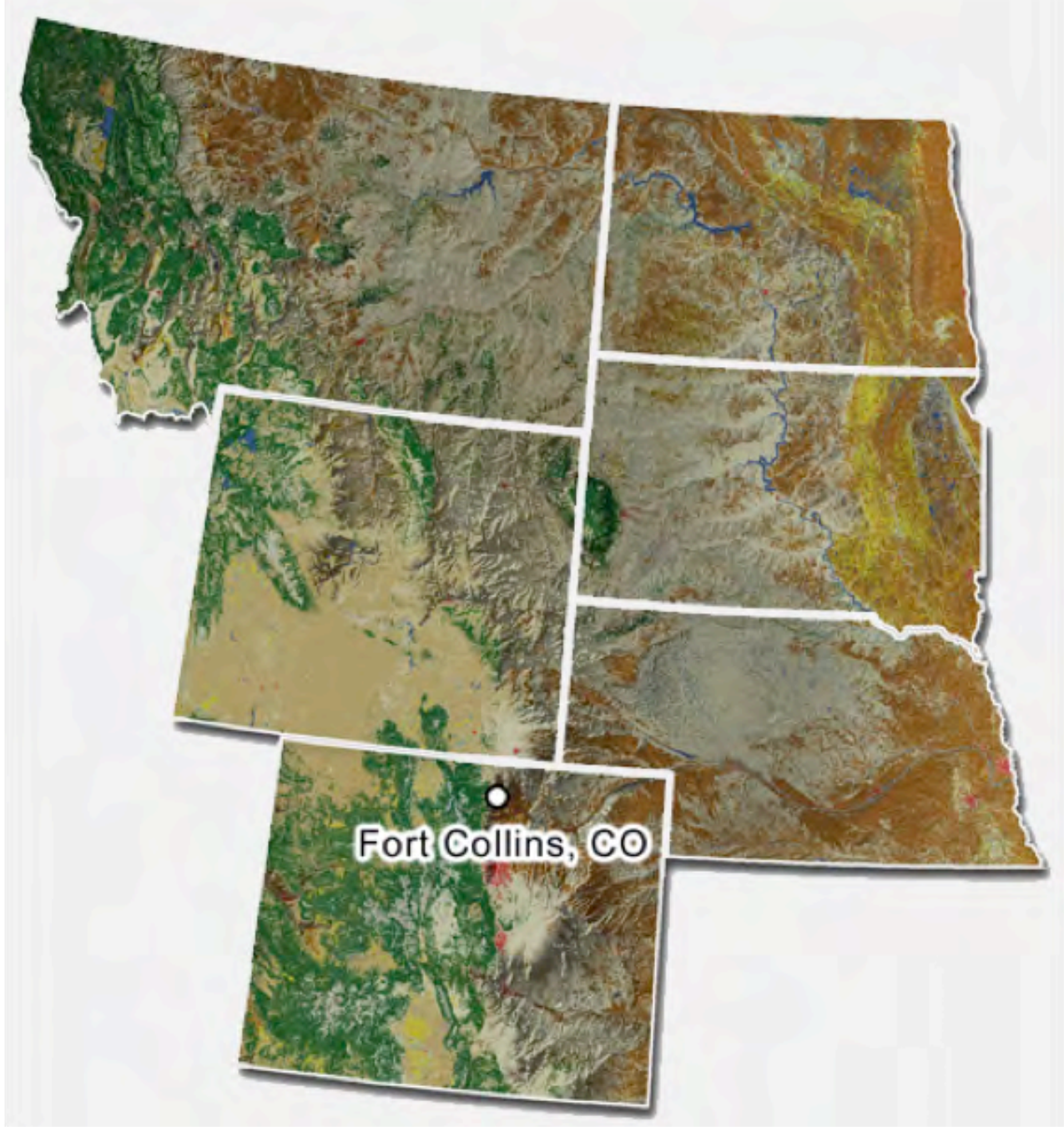
information, tools, & management practices

through trusted technology transfer providers to

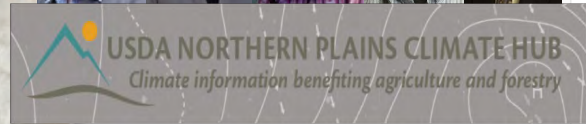
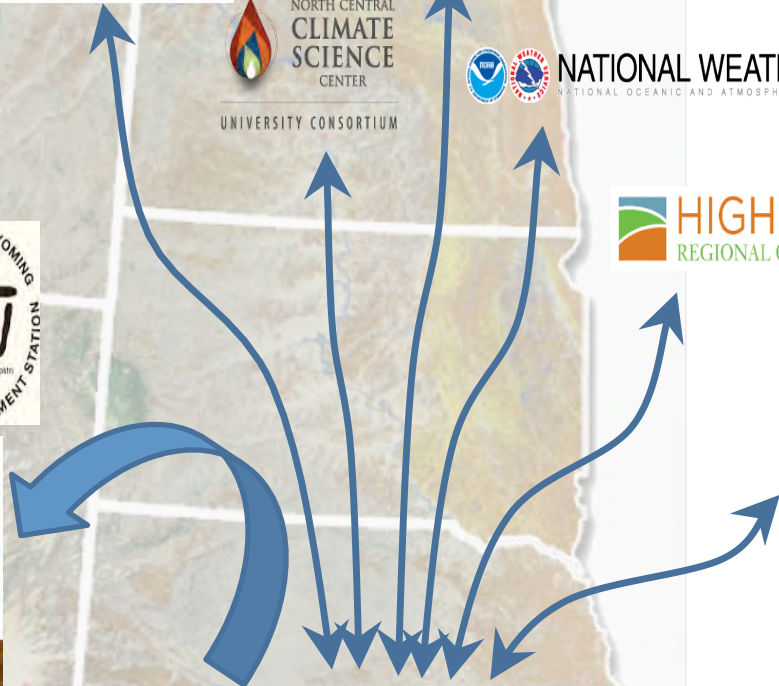
agricultural producers

for reduction of enterprise risk & resilience of
working lands.

USDA Northern Plains Climate Hub



Partnerships: Our foundation

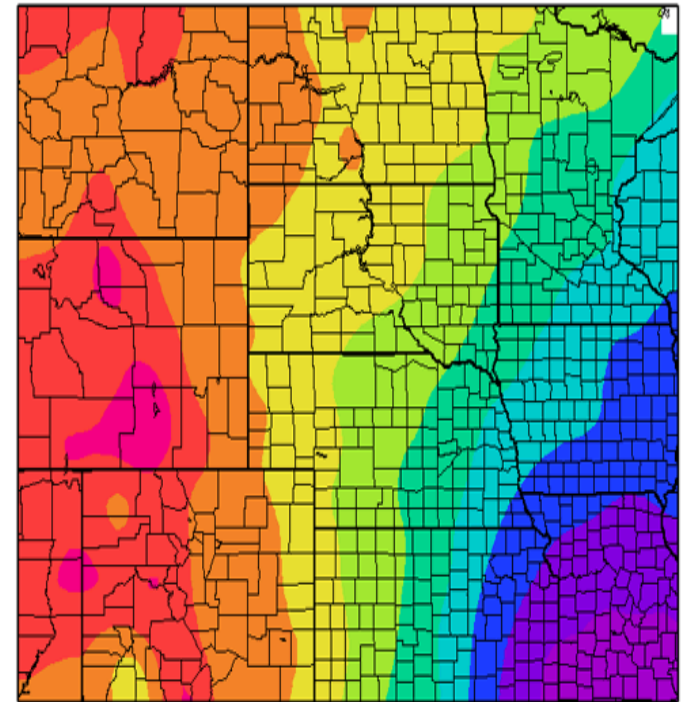


United States Department of Agriculture
Northern Plains Climate Hub

USDA NPCH: Diversity

- Arid, semiarid, & mesic environments
- Diverse land uses, management & production-emphasis
 - 37% lands enrolled in conservation programs
 - > 1/3 range & pasture lands

of Days with Precipitation \geq 0.50 (in) - Ann



East-West Gradient
21 to 3 days of $> 0.5''$ of
precip. across ~ 600 miles

Fort Collins, CO

Partnerships: Extension

NDSU EXTENSION SERVICE

M
MONTANA
STATE UNIVERSITY
EXTENSION

SDSU
Extension



UNIVERSITY
OF WYOMING
EXTENSION

Colorado
State
University

Extension

N

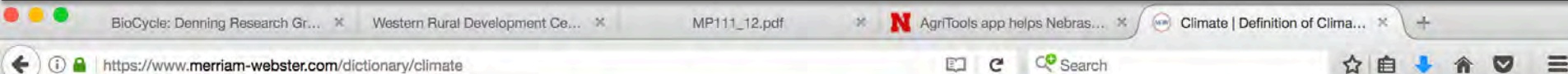
EXTENSION

Colorado Water Institute
A Division of the Office of Engagement






NORTHERN PLAINS
CLIMATE HUB
EXTENSION & OUTREACH

USDA NPCH: Climate Defined



SINCE 1828

GAMES | BROWSE THESAURUS | WORD OF THE DAY | VIDEO | WORDS AT PLAY | FAVORITES

Follow:    

climate

DICTIONARY

THESAURUS

climate

noun | cli·mate | \ˈkli-mət\

Popularity: Top 30% of words

Examples: CLIMATE in a sentence

Editor's note: Did You Know?

Definition of CLIMATE

- 1 : a region of the earth having specified **climatic** conditions • His physician advised moving to a warmer *climate*.
- 2 **a** : the average course or condition of the weather at a place usually over a period of years as exhibited by temperature, wind velocity, and precipitation • a healthful *climate* • a warm, humid *climate*
b : the prevailing set of conditions (as of temperature and humidity) indoors • a *climate*-controlled office
- 3 : the prevailing influence or environmental conditions characterizing a group or period : **ATMOSPHERE** • a *climate* of fear • a *climate* of suspicion • the cultural *climate* of the 1960s

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Reduce stress.

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Lenovo

WORD OF THE DAY

brachiate

to swing from hold to hold by
the arms

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USDA

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Partnerships: Extension

Colorado Water

March/April 2016 | CSU Water Center

CLIMATE SMART AGRICULTURE

Colorado State University



Colorado State University

Extension

Table of CONTENTS



Many theories have been advanced as to the cause of the change in weather. Some scientists feel that cosmic dust speckles in part why it is a disturbing factor, sun spots, which are variable disturbances of the sun. Since the spots increase in density the sun emits more energy and decreases in a sense in less uniform pattern many believe appears to be increased the sun's influence the weather. It probably does some effect. Carbon dioxide gas in the atmosphere is at present a tremendous quantity 235 billion tons. We are now adding 10 billion tons per year. Each time you drive your car around the block you make a contribution of this gas to the atmosphere. This gas together with ozone, water vapor and other gases in the earth's surface which increases the temperature of the air somewhat in the nature of heat from the sun. These various material effects have been known for a long time but since man has little in the direction of we can only limit our effects in the least possible way. At the moment there are no other means of a solution to this problem. I think it is the duty of us to do our best to do what we can for the progress of mankind. It is a pleasure to attend to this with you.

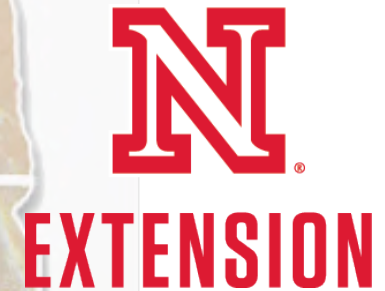
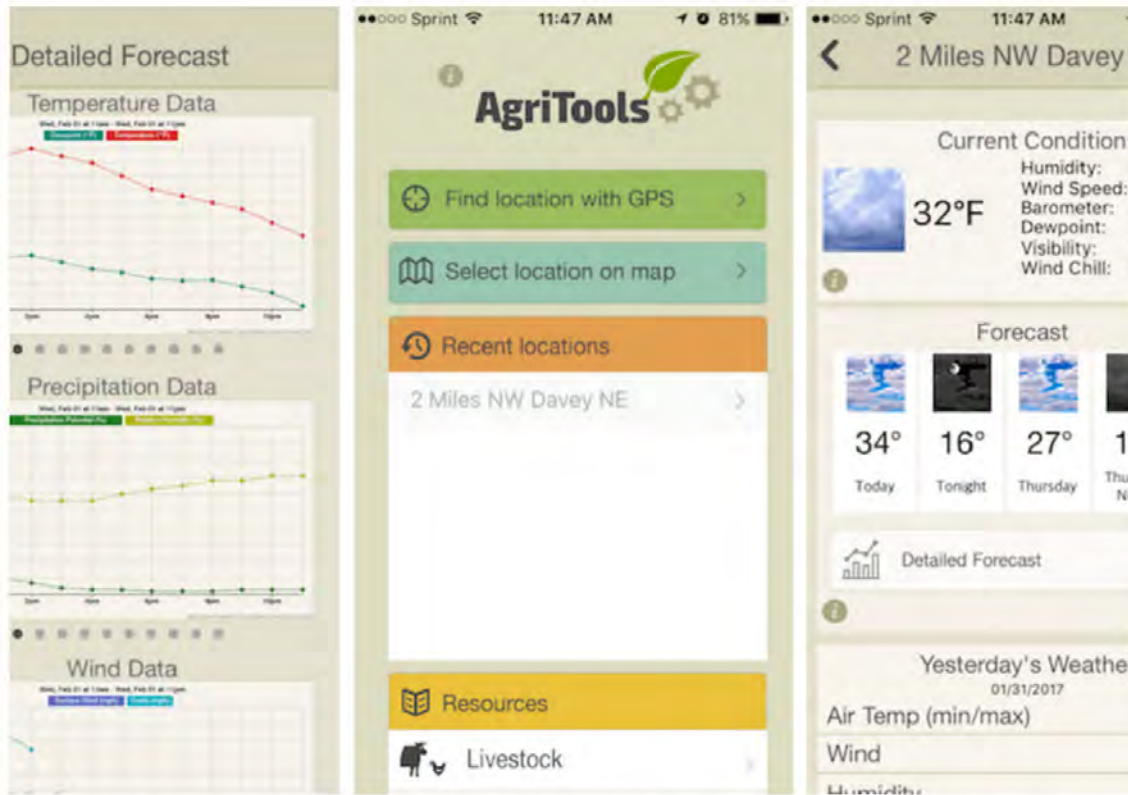
Features— Climate Smart Agriculture

- 2 **Global and Local Climate Change: What We Know and Expect**
By Bradley H. Udall
- 8 **State of Colorado Climate Change Actions**
By Taryn Finnessey and John Stulp
- 10 **Climate Trends in Colorado over the Past Century**
By Nolan Doesken
- 14 **Greenhouse Gases and Agriculture**
By Bradley H. Udall
- 17 **Agricultural Climate Change Impacts and Adaptation Opportunities for Colorado**
By Reagan Waskom and Dennis Ojima
- 24 **Farm and Ranch Carbon Footprints Made Easy**
By Keith Paustian, Kevin Brown, Mark Easter, and Matt Sterner
- 29 **Climate Smart Agriculture**
By Louis Longchamps and Rajiv Khosla
- 31 **Looking at Climate Change and Global Food Security**
By Peter Backlund
- 32 **Solving the Climate Change Riddle: Reasons for Optimism**
By Bradley H. Udall
- 36 **Further Reading**

On the cover: Akron, Colorado
Photo by Bryce Bradford

Ralph Parshall, one of Colorado's water leaders and an internationally-celebrated member of the CSU faculty, gave a speech in 1957 at the Rotary Club in Fort Collins where he talked about how greenhouse gases emitted by humans could change the climate. Climate has since grown to be a significant international concern. Courtesy of Water Resources Archive, CSU Libraries

Partnerships: Extension



AgriTools is a free mobile app designed to provide location-specific climate and weather information to agricultural producers.

✓ Climate science training for > 50 UN-Extension professionals

Partnerships: Extension



Volume 28 Number 44 • March 4, 2017

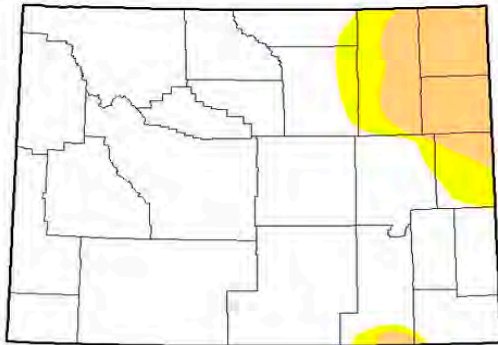
CONNECTING AG to CLIMATE

By Windy Kelley, Northern Plains Regional Climate Hub



United States Department of Agriculture
Climate Hubs

U.S. Drought Monitor Wyoming



March 7, 2017
(Released Thursday, Mar. 9, 2017)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

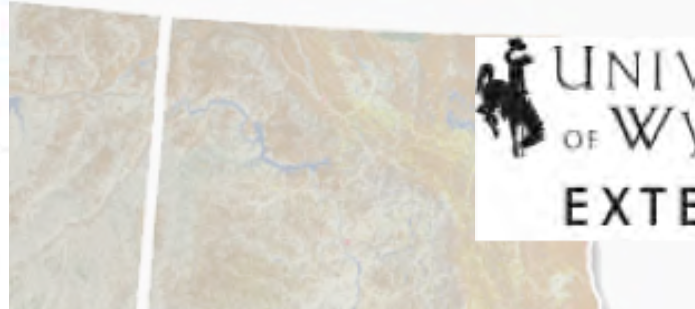
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	85.14	14.86	9.33	0.00	0.00	0.00
Last Week 2/29/2017	85.14	14.86	9.33	0.00	0.00	0.00
3 Months Ago 12/6/2016	56.01	42.98	15.58	2.53	0.00	0.00
Start of Calendar Year 1/1/2017	60.98	39.02	15.58	0.72	0.00	0.00
Start of Water Year 8/27/2016	41.39	58.61	24.40	9.97	0.00	0.00
One Year Ago 3/6/2016	24.15	75.85	13.78	2.15	0.00	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brian Fuchs
National Drought Mitigation Center



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Home About Us Projects Publications Tools & Resources Workshops & Events Western Climate



WWA Home » Intermountain West Climate » Intermountain West Climate Dashboard

Intermountain West Climate Dashboard

The Intermountain West Climate Dashboard provides an array of climate and water graphics for Colorado, Utah, and Wyoming that are automatically updated as often as the original providers post them on their respective websites (the update frequency is listed under each graphic). We also post text briefings once per month based on the climate graphics. *Note:* the text in the latest briefing may not be fully consistent with the climate graphics in the Dashboard, depending on the weather and updates in the graphics since that briefing was posted.

Click on any graphic to view a full-sized version, and click again to reduce it. You can enlarge multiple graphics at the same time, and click-drag to move them around your desktop.

The name of each graphic below is linked to the page for that graphic at the provider's website.

See [this page](#) for detailed descriptions of all of the Dashboard graphics, or click the above each graphic to see the description of that graphic.

Also please visit the new [Rocky Mountain-High Plains Climate Dashboard](#), which covers an eight-state region: Montana, Wyoming, Utah, Colorado, North Dakota, South Dakota, Nebraska, and Kansas.

If you have suggestions for the Dashboard, please [contact us](#).

www.colorado.edu

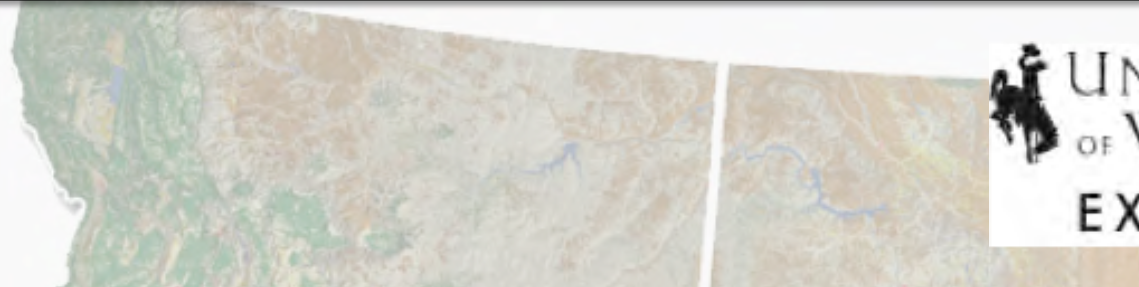


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*... thanks for showing us the weather & climate tools ...
I've been using the ... for sorting out data from the
winter & looking for some gaps in coverage ... was
asking about this year's snowpack compared to normal
– I used ... to build some graphs & passed them along ...
thanks for the info!*

- '17 University of Wyoming Extension Educator

Extension Professional Development



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Mini-Grants

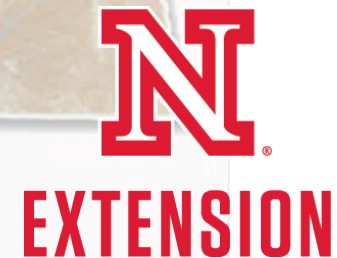
Extension, Outreach, & Engagement Program Funds: 2017 Request for Proposals

- ✓ Accepted on a rolling basis
 - April 1 and October 1
- ✓ Extension led; \$15k
- ✓ Multi-state

Partnerships: Extension



Learning From Your Neighbor: Weather Resiliency in Agriculture



United States Department of Agriculture
Northern Plains Climate Hub



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extension
America's Research-based Learning Network

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University of Nebraska
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Montana State University
Extension

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Caleb Carter
David Keto
Windy Kelley
University of Wyoming
Extension



MP-131.2
Jan 2017



Using No-Till To Minimize Extreme Weather Impacts

The Great Plains region is not a stranger to extreme weather, and too much or too little rain is often a problem when managing agricultural land. No-till management is one option for adapting to the impact highly variable and highly destructive weather can have on crop production.

No-Till Management

No-till farming in Nebraska is nothing new, but this management system is not widely used. According to a statewide survey in 2004 (date of last state-wide survey), 27% of all crop acres in Nebraska are managed under no-till, but that number is expected to be much higher now.

No-till uses a systems approach to crop production where crops are grown with minimal soil disturbance and the soil is kept covered with crop residue to conserve soil and water. Continuous no-till and crop rotation, intensity, and diversity are keys to making no-till successful and building the soil system while minimizing potential problems. No-till is not a one-year management plan. It requires continually planting crops, every year, without tillage to get the full benefits. Management of residue, nutrients, pests, equipment, and other factors must be a part of the no-till systems approach.

Producers often use a selected tillage system based on familiarity and tradition. Each tillage system has its advantages and disadvantages, which producers must consider before changing systems. For soil moisture conservation, erosion control, benefits to soil structure and health. Some dependence on herbicides, no incorporation of residue, soil warming on poorly drained soils.



A Part of the Cooperative Extension System



Collins, CO

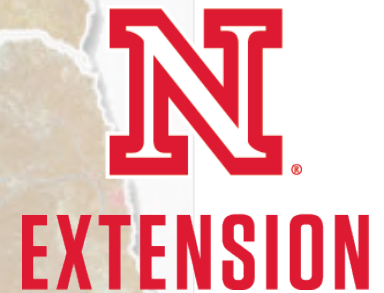


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Partnerships: Extension

Scenario Planning for Resilient Beef Systems

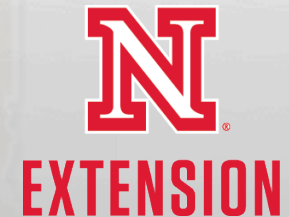


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Partnerships: Extension

Objectives

- Determine future scenarios based on climate science
 - Plausible
 - Divergent
 - Relevant
 - Challenging to the beef industry
- Determine robust management options
 - Address key scenario drivers
- Develop a plan to address Extension programming needs
- White papers
 - Summarize future impact of climate to the NP beef systems



Partnerships: Extension

Accomplished to Date:

- 2 Rounds of focus groups
- Determined key climate scenarios
- Completed 3 white papers

In Process:

- Analyzing focus group feedback on management options
- Modeling of climate scenarios with local production data

Beef & Crops Resiliency Climate Scenario Planning



United States Department of Agriculture
Northern Plains Climate Hub



SDSU
Extension



EXTENSION

Partnerships: Extension

Scenario Planning for Resilient Beef Systems

Crystal Powers

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@UNLextCrystal



EXTENSION

Scenario Planning for Resilient Cropping Systems

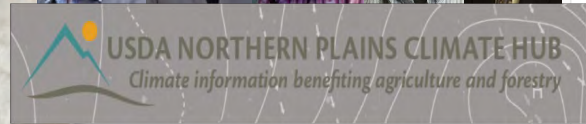
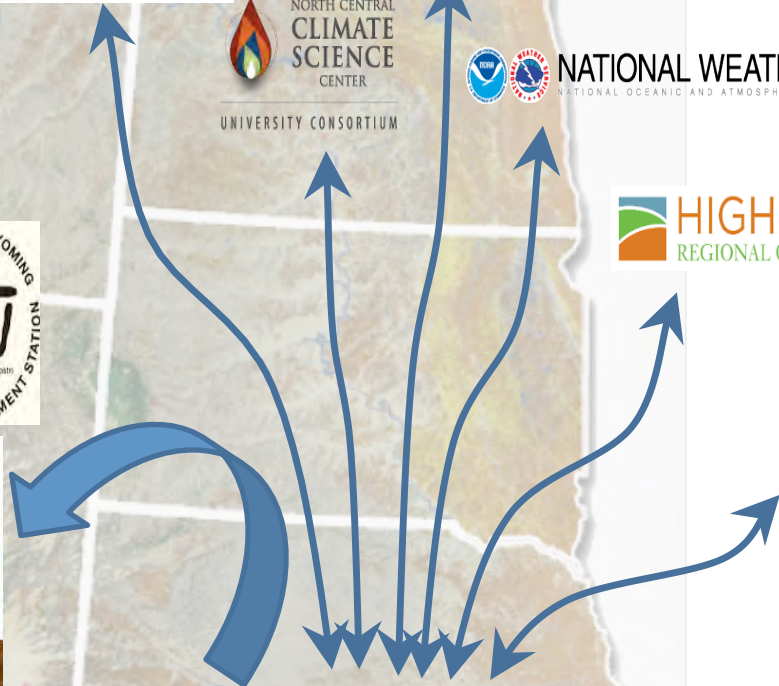
Tyler Williams

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Partnerships: Our foundation



United States Department of Agriculture
Northern Plains Climate Hub

Partnerships: Outreach

Drought Impacts
and Outlook

Wyoming
January—February 2017

Wyoming — Climate Overview

I'm always interested in additional scientific information that has validity. Thanks for sharing ...

- '16 Wyoming Rancher

... really an excellent report. I've been looking for information like this for quite some time it will be very helpful to the [USDA] FSA boards and to natural resource planners.

- '16 Wyoming Rancher

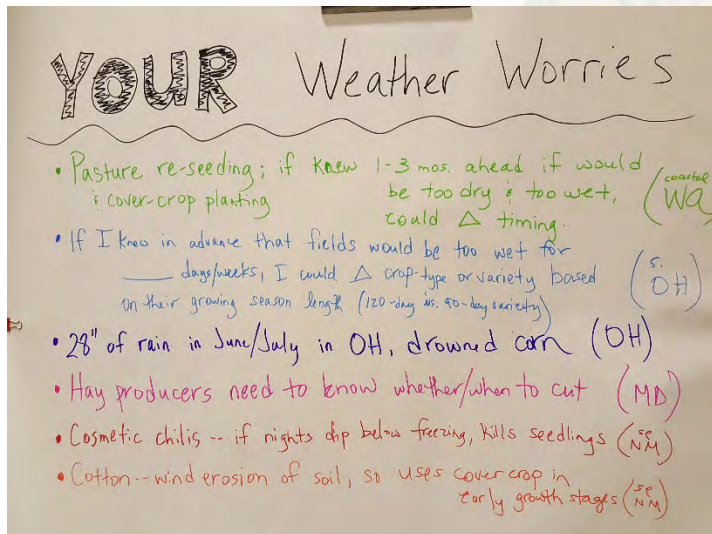
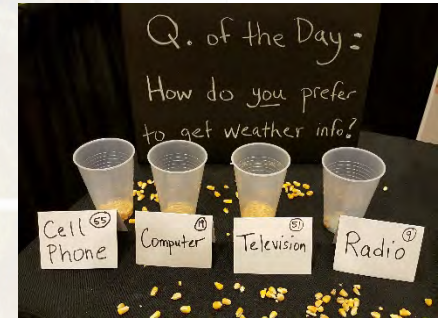
I have heard feedback about the drought impacts and outlook report ... really liked the report and felt it extremely beneficial. Especially the long term outlook.

- '17 State Employee Ag Industry

Partnerships: Outreach

Professional Society, Association, & Grower Meetings

- ✓ Wyoming Stock Growers Association
- ✓ WESTI Ag Days
- ✓ Society for Range Management
- ✓ National Association of Conservation Districts



Partnerships: Outreach


Our Lands to Your Hands Program

- ✓ Importance of ag & climate to our daily lives
 - Food, fiber, fuel, etc
 - Value of ag land for wildlife
 - History & culture

> 800 youth
~ 150 general public



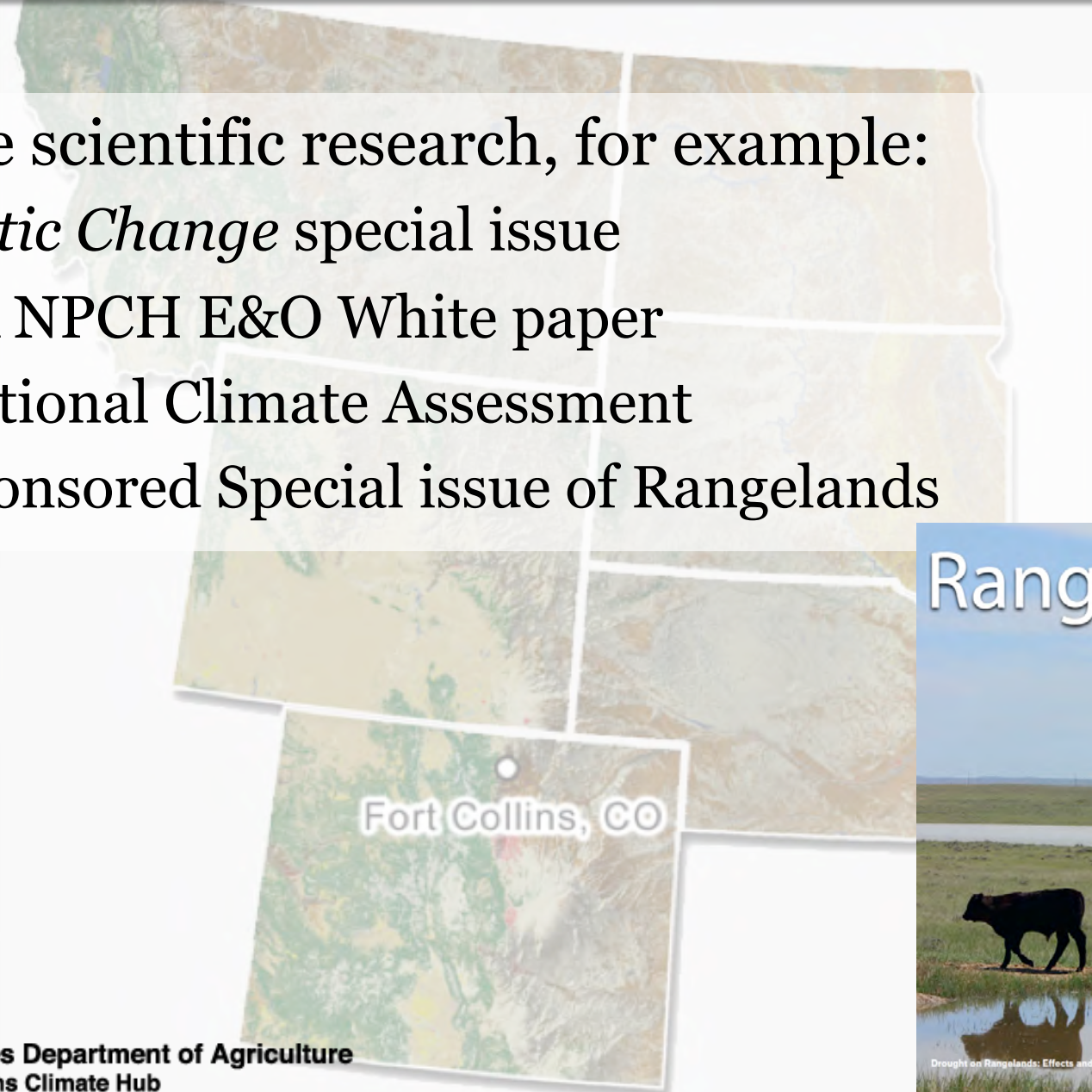
Snowflakes to Cornflakes

- ✓ Climate, snowfall, & growing conditions impact crop production
- ✓ Growing cycle of corn & its water needs
- ✓ Snow → water → 
- ✓ Harvest, grinding, & used to produce common foods

Partnerships: Outreach

Synthesize scientific research, for example:

- ✓ *Climatic Change* special issue
- ✓ USDA NPCH E&O White paper
- ✓ 4th National Climate Assessment
- ✓ Co-sponsored Special issue of *Rangelands*



Fort Collins, CO



Rangelands

Society for Range Management
Volume 33, Issue 4, August 2013

Drought on Rangelands: Effects and Solutions

S&M

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United States Department of Agriculture
Northern Plains Climate Hub

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<https://climatehubs.oce.usda.gov/northernplains>

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