



12.16.2022

Range & Drought Outlook

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LIVESTOCK AND RANGE
COLORADO STATE UNIVERSITY
EXTENSION

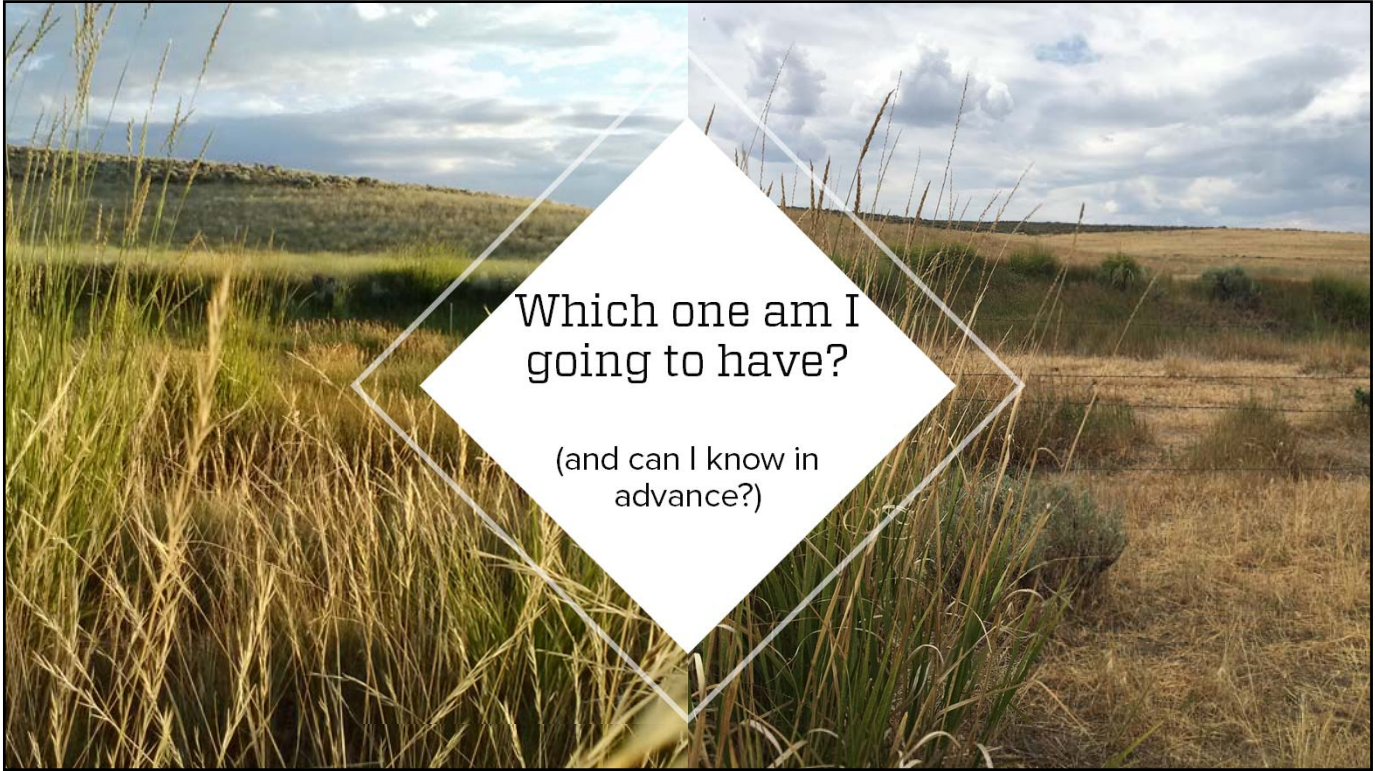
Photo Credit: Mary Ashby

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Problem :how much forage will I have in 2023?

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2002	223 lb / acre	1338 lb / acre	2003
2004	758 lb / acre	1250 lb / acre	2005

Being adaptable allows you to thrive in highly variable environments.

RESILIENT
Weather-Ready Ranching

LIVESTOCK AND RANGE
COLORADO STATE UNIVERSITY

USDA
Northern Plains Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

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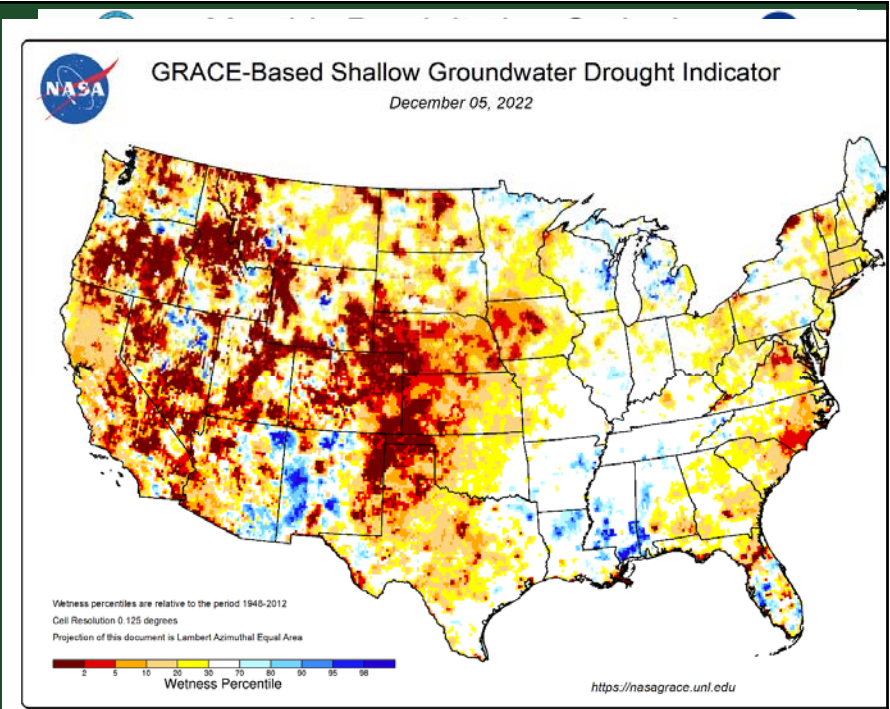
Good news:

There *are* guardrails.



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Problem 2 :
Which
product do
I look at?



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Outline

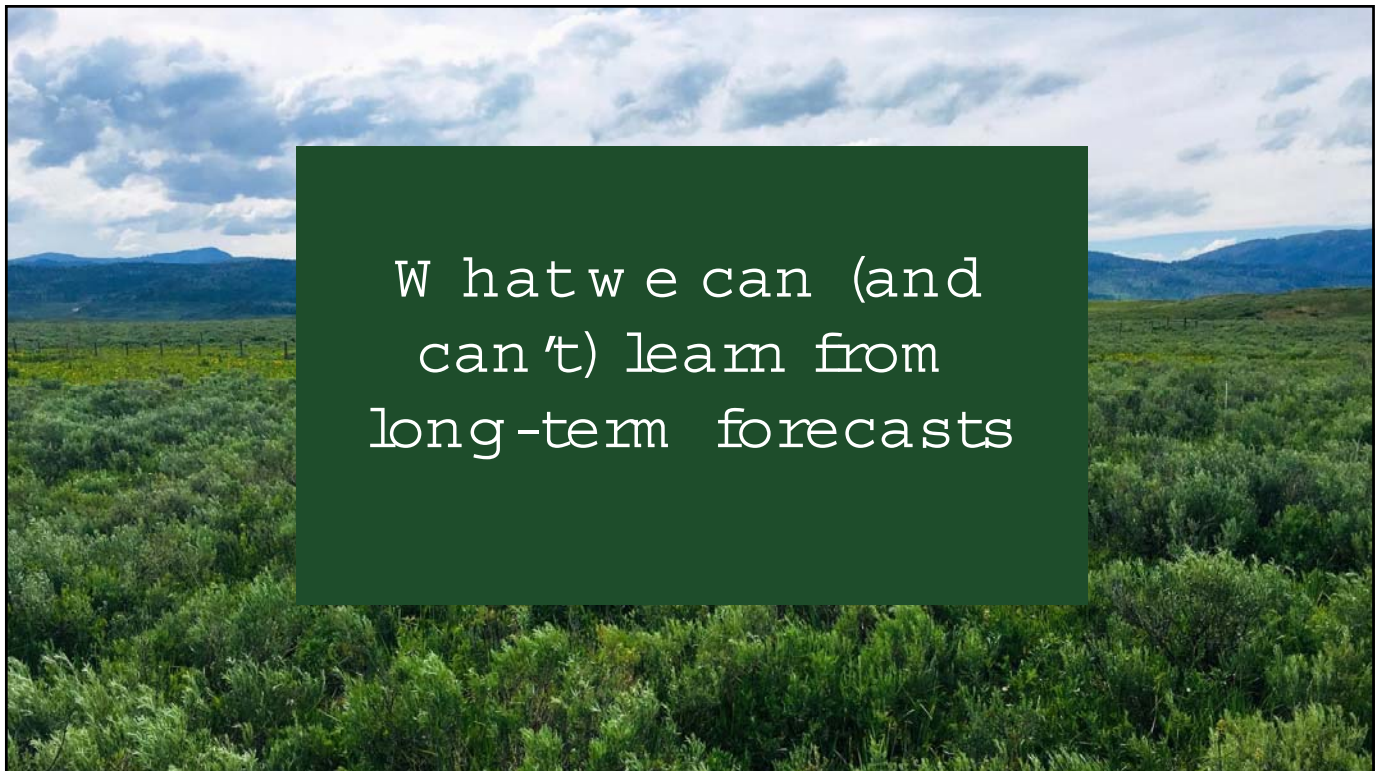
What can I expect in range conditions in the upcoming growing season?



Colorado Agricultural **DROUGHT** **HANDBOOK**

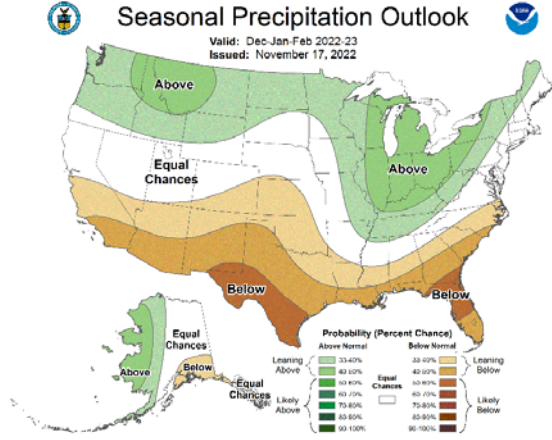
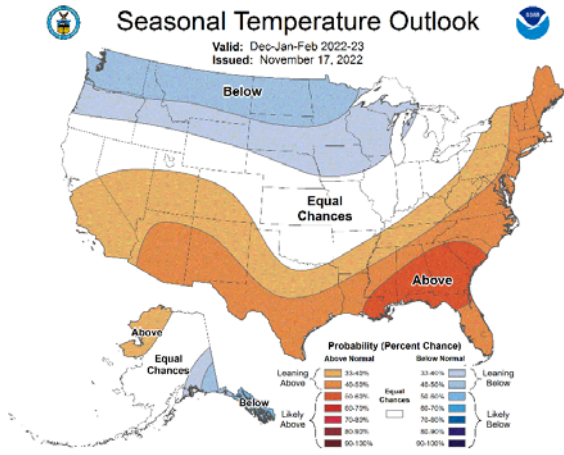


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Colorado State University Extension es un proveedor que ofrece igualdad de oportunidades. | Colorado State University no discrimina por motivos de discapacidad y se compromete a proporcionar adaptaciones razonables. | Oficina of Engagement and Extension de CSU garantiza acceso significativo e igualdad de oportunidades para participar a las personas quienes su primer idioma no es el inglés. Col. 421014



What we can (and can't) learn from long-term forecasts

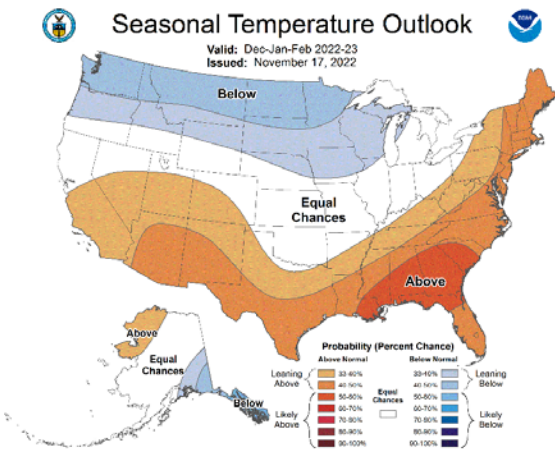
Three Month Outlook



Available at: https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1

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Three Month Outlook



Available at:
https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1

What it tells you

- Probability of above or below average conditions occurring.
- The darker the color, the higher the likelihood of an outcome.

What it does not tell you

- Does not tell you what is average.
- Does not say how much above or below normal temperatures or precipitation will be.
- Does not indicate the onset or recovery status of drought.

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Drought Outlook

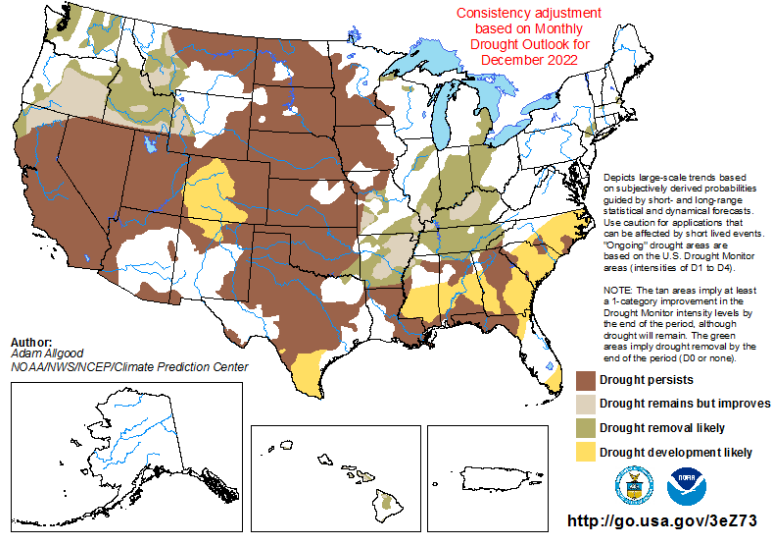
"La Niña conditions are expected to persist through winter, but will likely return to ENSO-neutral conditions by spring. NOAA December precipitation forecasts suggest an increased probability of above normal precipitation for most of Utah and Wyoming, while probabilities for above normal, below normal, and equal chances are split for Colorado."

<https://www.colorado.edu/resources/international/mountain-west-climate-dashboard>

Available at:
https://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

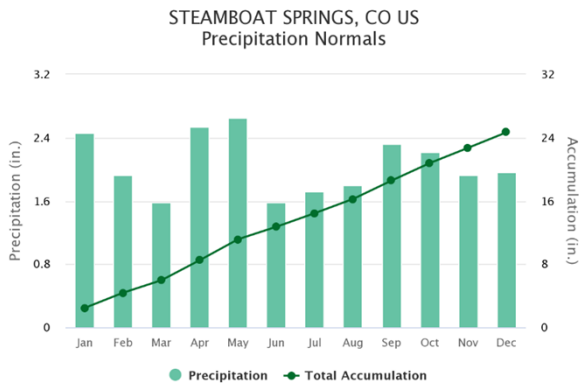
Valid for December 1, 2022 - February 28, 2023
 Released November 30, 2022



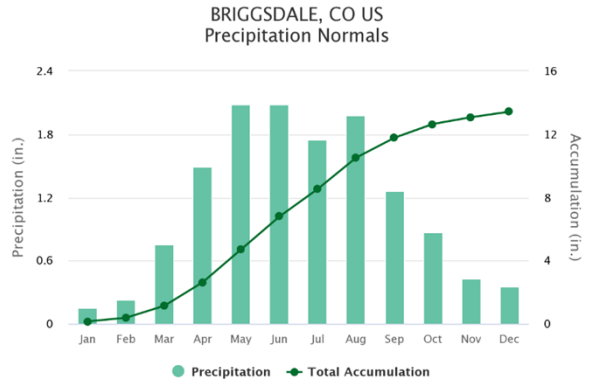
Know your region

A dry forecast has a bigger impact during a month/season that is climatologically wetter.

Available at:
https://climate.colostate.edu/normals_stn_select.html

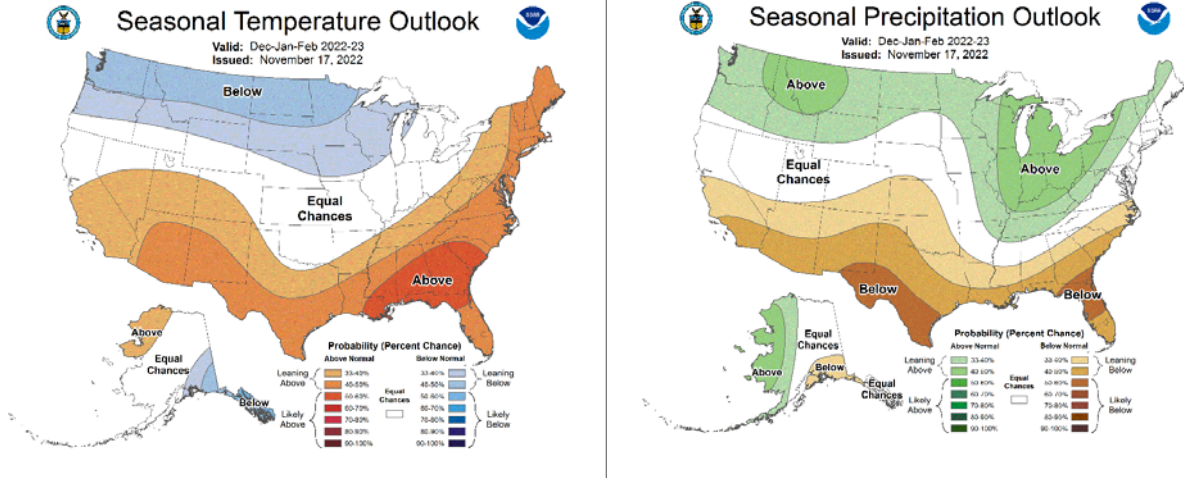


- Pretty much any time of year, a dry forecast could become quickly problematic.
- Dry in the winter could inhibit accumulating snowpack
- Dry in the summer could dry out soils



- in the spring and summer, this will quickly lead to large precipitation deficits that could be hard to recover.
- in the winter drier than average is probably more common than being wetter than average.

Three Month Outlook



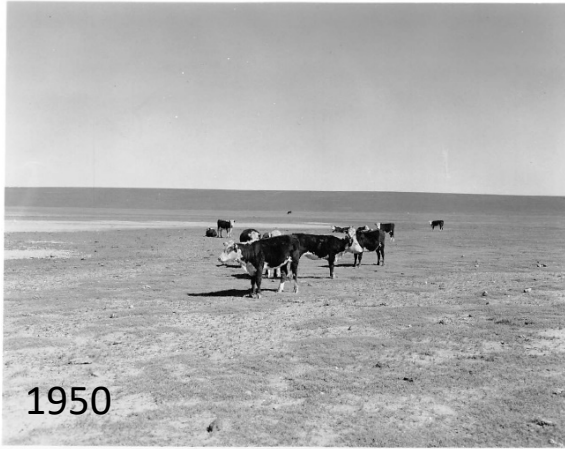
Available at: https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1

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Can we use long-term climate info to predict forage production?



1950



1956

Cows in 1950 (left) and in 1956 (right) on heavy grazing intensity pasture during three decade-long cold Pacific Decadal Oscillation phase. Taken at the Central Plains Experimental Range of United States Department of Agriculture-Agricultural Research Service (USDA ARS) near Nunn, Colorado

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Pastures at the Central Plains Experimental Range during the current warm Pacific Decadal Oscillation.



Heavy stocking, 0.33
AUM /acre



Moderate stocking,
0.22 AUM /acre



Light stocking, 0.17
AUM /acre

Photo credits: Edward J. Raynor (left, middle), Melissa Johnston (right).

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Sea surface temperature impacts climate in Colorado



El Niño/ La Niña

- Equatorial region of the Pacific
- Switches on 1-3 yr time scales



Pacific Decadal Oscillation

- West Coast in the Pacific Ocean
- 10 - 30 yr cycles
- Cold phase can lead to high variability

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Photo credits: Justin Demer

Short
answer:
Yes.

Long term forecast explained
70% of the weight gain in the
78-year experiment.

Original Publication: Raynor, E. J., Demer, J. D., Hoover, D. L., Parton, W. J., & Augustine, D. J. (2020). Large-scale and local climatic controls on large herbivore productivity: implications for adaptive rangeland management. *Ecological Applications*, 30(3), e02053.

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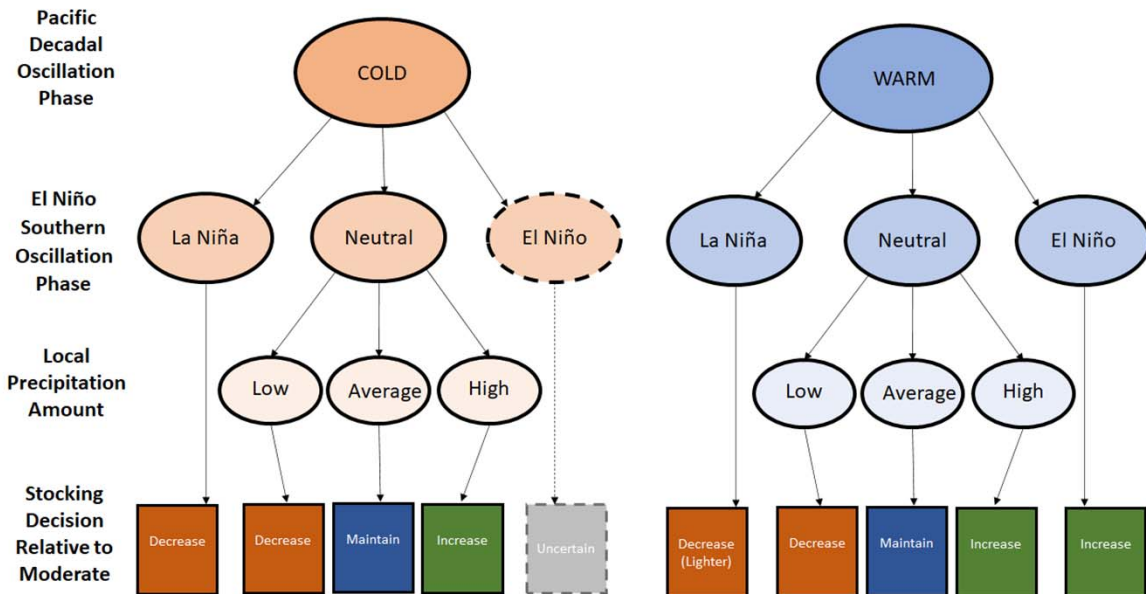


Long
Answer:
How ?

Photo Credit: Nicole Kaplan

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Using Long -Term Forecasts For Early W aming



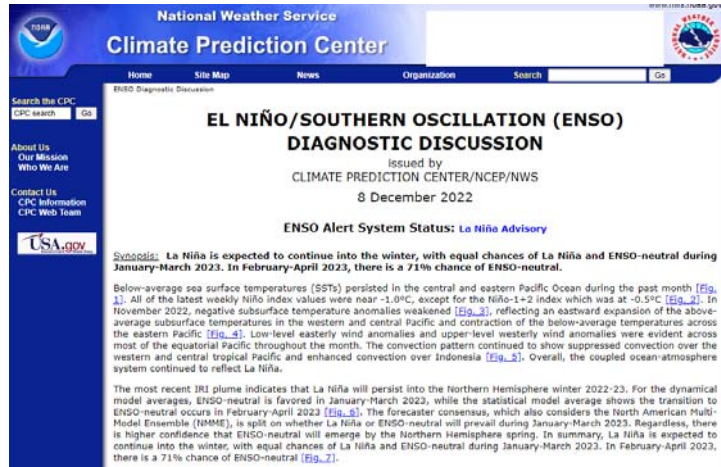
E. J. Raynor, Demer, J. D., Hoover, D. L., Paxton, W. J., and Augusthe, D. J. 2020. Large-scale and local climatic controls on large herbivore productivity: implications for adaptive range and management. *Ecological Applications* 30 (8):2053-10.1002/eap.2053

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Where can I get info on ENSO?

01 National Weather Service, Climate Prediction Center

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ens0_advisory/ensodisc.html

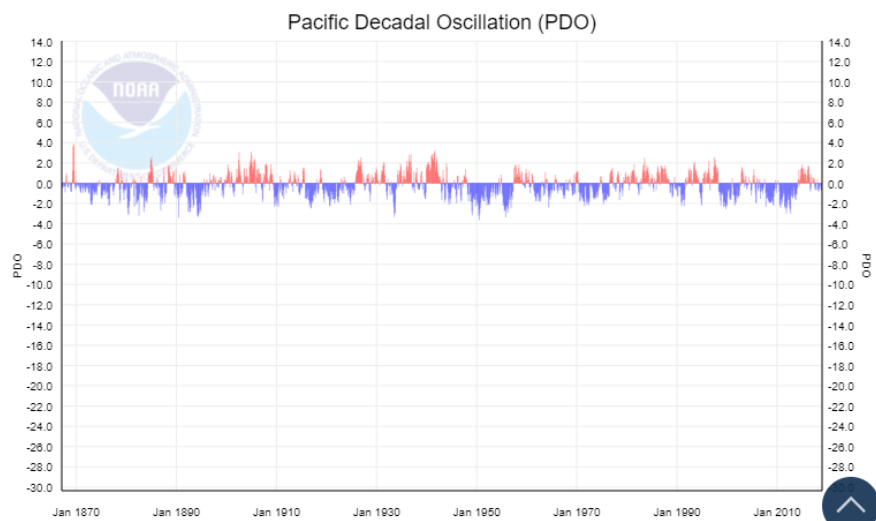


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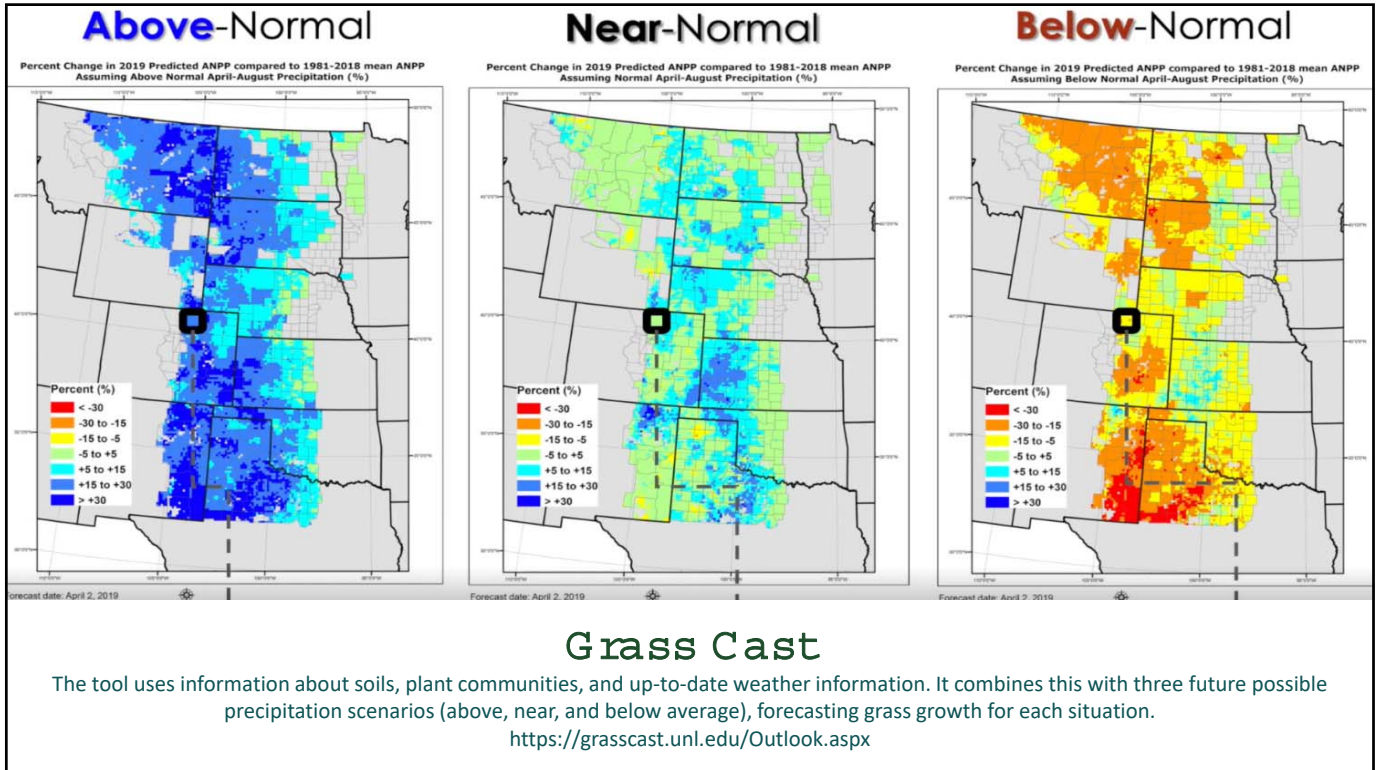
Where can I get info on the Pacific Decadal Oscillation?

01 National Oceanic and Atmospheric Administration

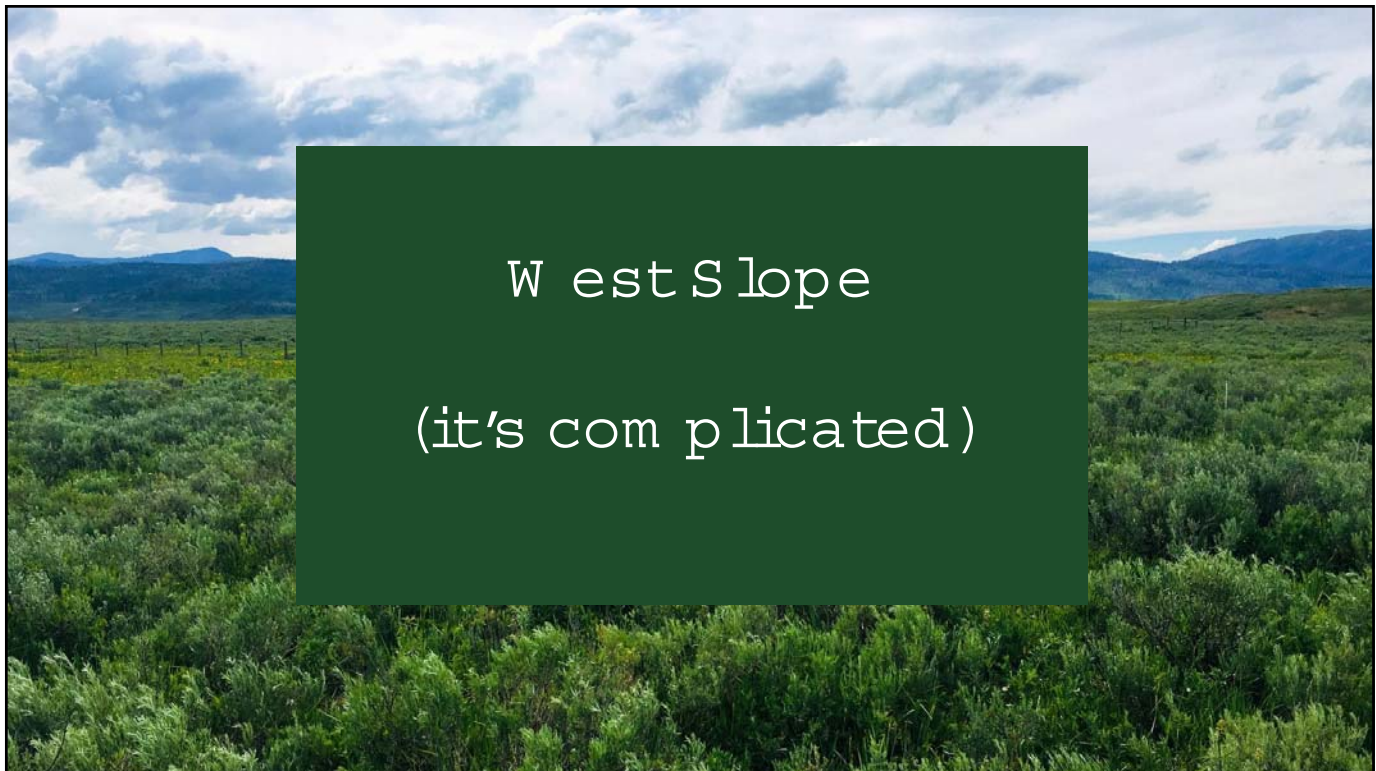
<https://www.ncdc.noaa.gov/teleconnections/pdo/>



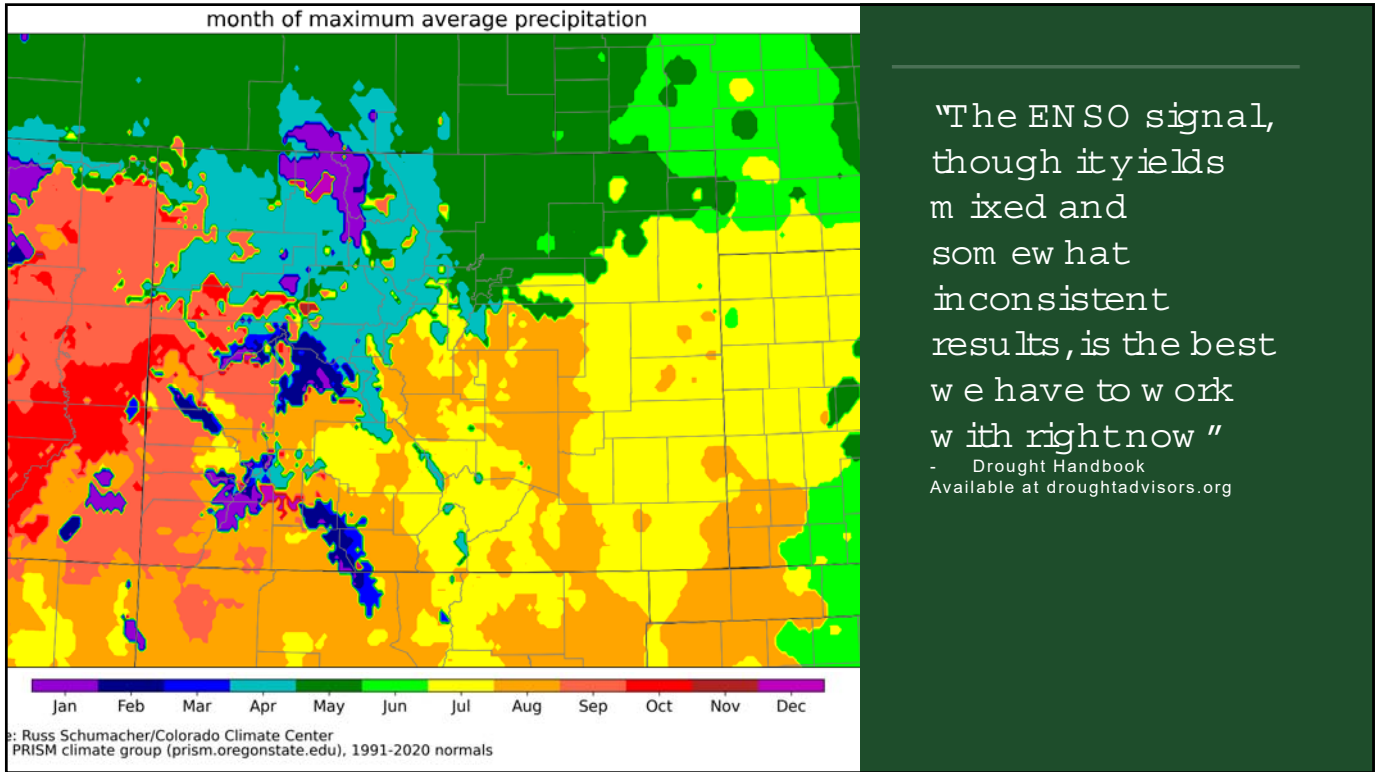
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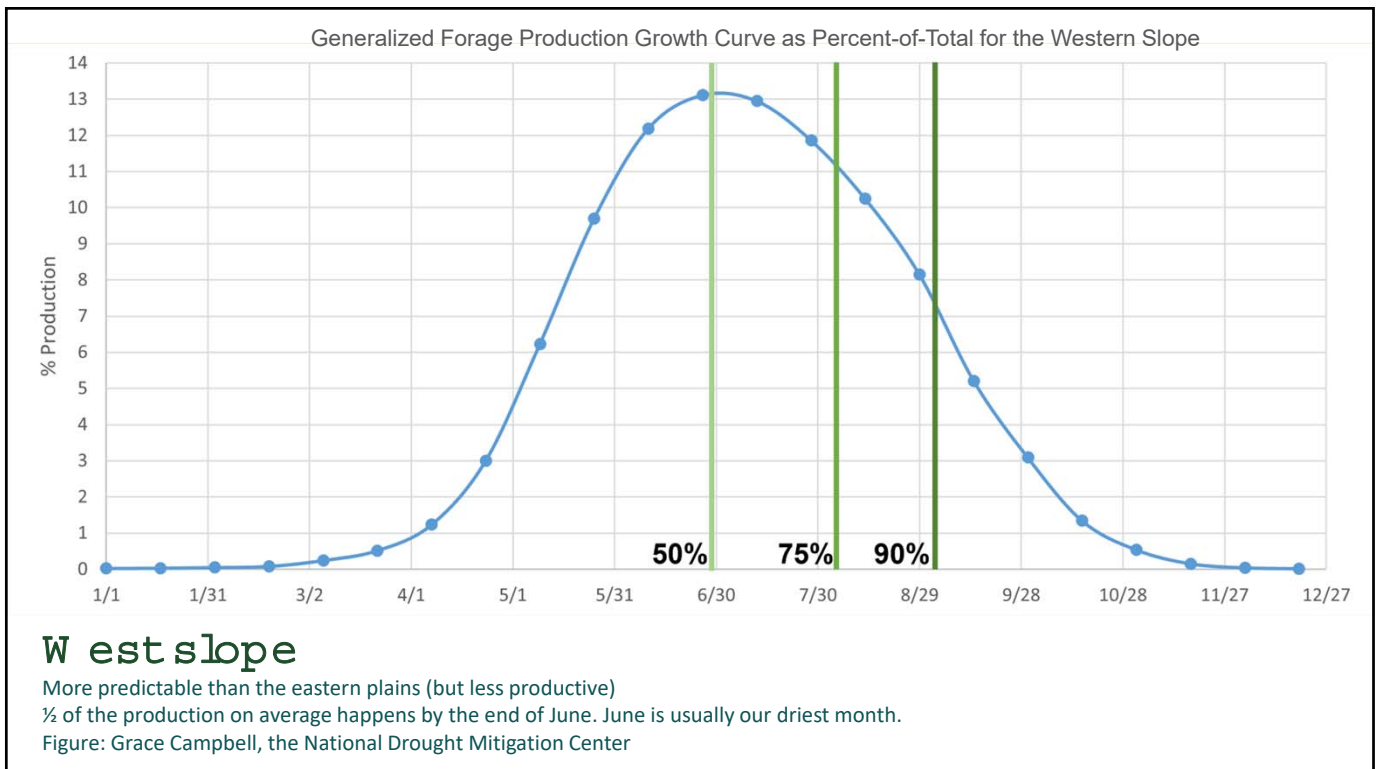
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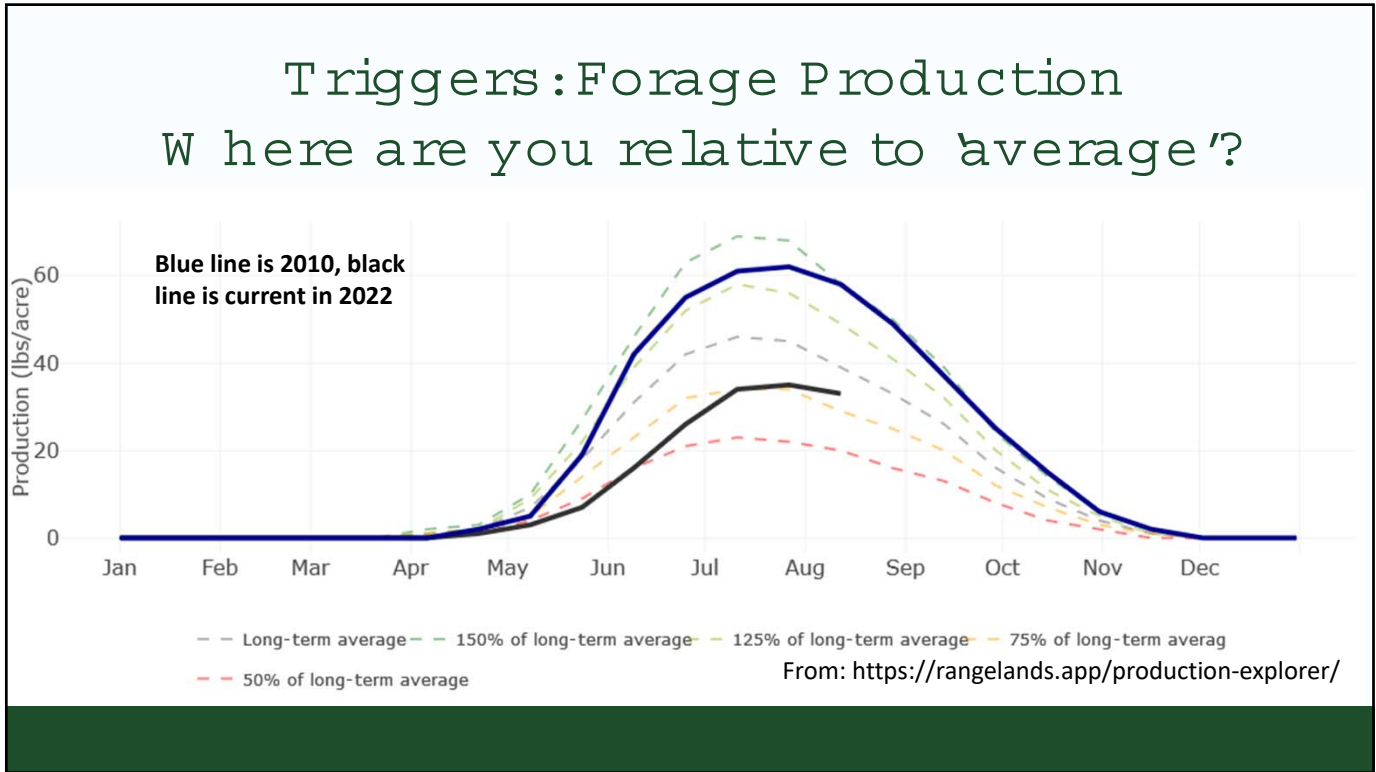
"The ENSO signal, though it yields mixed and somewhat inconsistent results, is the best we have to work with right now"

- Drought Handbook
Available at droughtadvisors.org

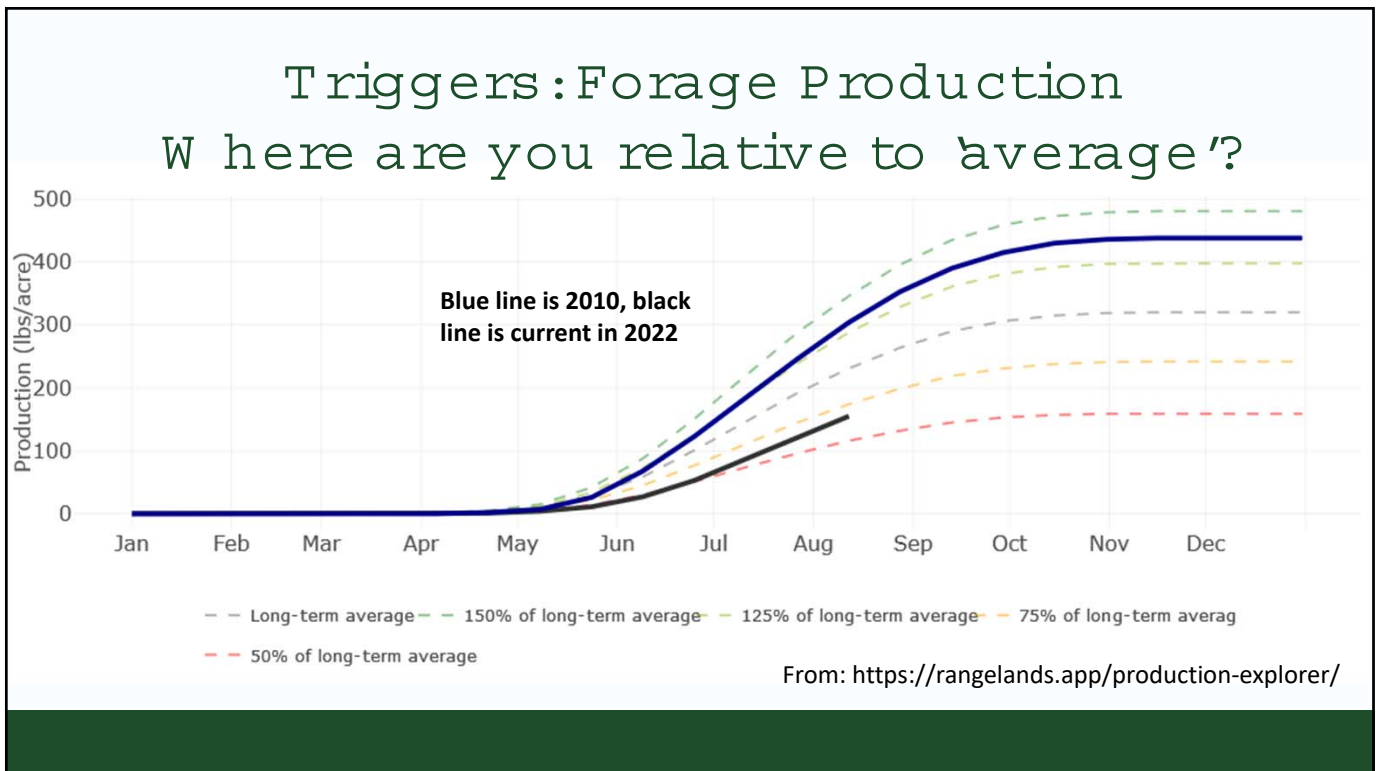
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Outline

What can I expect in range conditions in the upcoming growing season?

- What we can (and can't) learn from long-term forecasts
- Interpreting forecasts for your region
- Tools & resources

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Using Production Info in Drought Planning

	FORAGE PRODUCTION ESTIMATE	LIKELIHOOD OF SCENARIO AS OF (<i>date</i>)	ADAPTIVE ACTION
BEST CASE 2021	700 lb/acre total 210 lb/acre available	<i>April 1? April 15? May 1?</i>	If scenario looks likely, will cull steers by X%..... or,
AVERAGE CASE 2021	500 lb/acre total 150 lb/acre available		cull to base herd Or ????????
WORSE CASE 2021	200 lb/acre 60 lbs/ acre available		?

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Additional Resources

Photo Credit: Melissa Johnston



- 01 Drought Handbook - droughtadvisors.org
- 02 Weather & Climate
 - Colorado Climate Center; [Drought Update page](#)
 - [Intermountain West Climate Dashboard](#)
- 03 Eastern Plains
 - FactSheet "[Early Warning for Stocking Decisions in Eastern Colorado](#)" and [Art of Range](#) podcast
 - [Grass Cast](#)
- 04 Western Slope
 - [Range Land Analysis Platform](#)

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Drought Advisors is a network of professionals committed to improving access to technical resources for drought preparation and response among Colorado producers.

Drought Advisors

Resources, webinars, handbook (!!!!), all the things...
droughtadvisors.org

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Key Take-Aways

So you're telling me



There's a Chance? MakeAGIF.com

- 01 No crystalball
 - At this point in time, I don't know what's going to happen
 - But some guideposts and resources
- 02 Range of possible outcomes diminishes as time goes on
- 03 Know your critical moments

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Thank you

Contact

Retta Bruegger

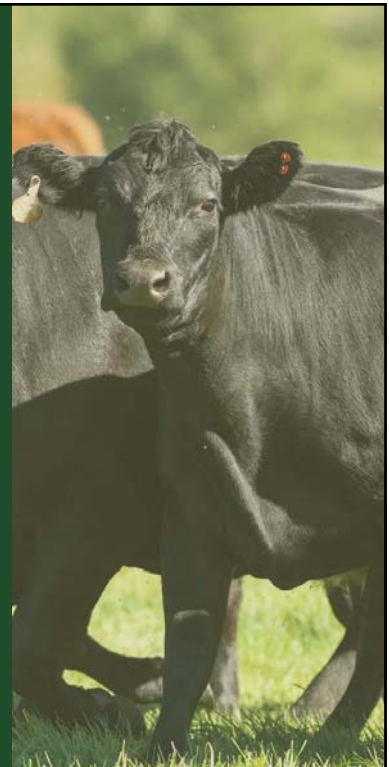
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