



# Drought Management

Casey Spackman

Extension Range Management Specialist

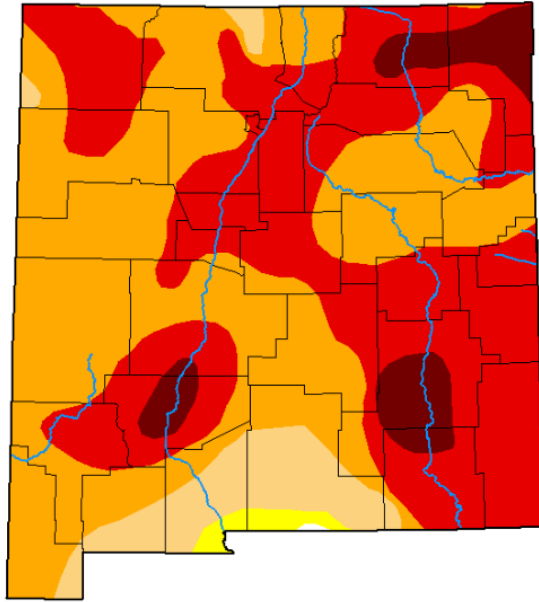
# How do you know you are in a drought?









# Measurable Indicators of Drought

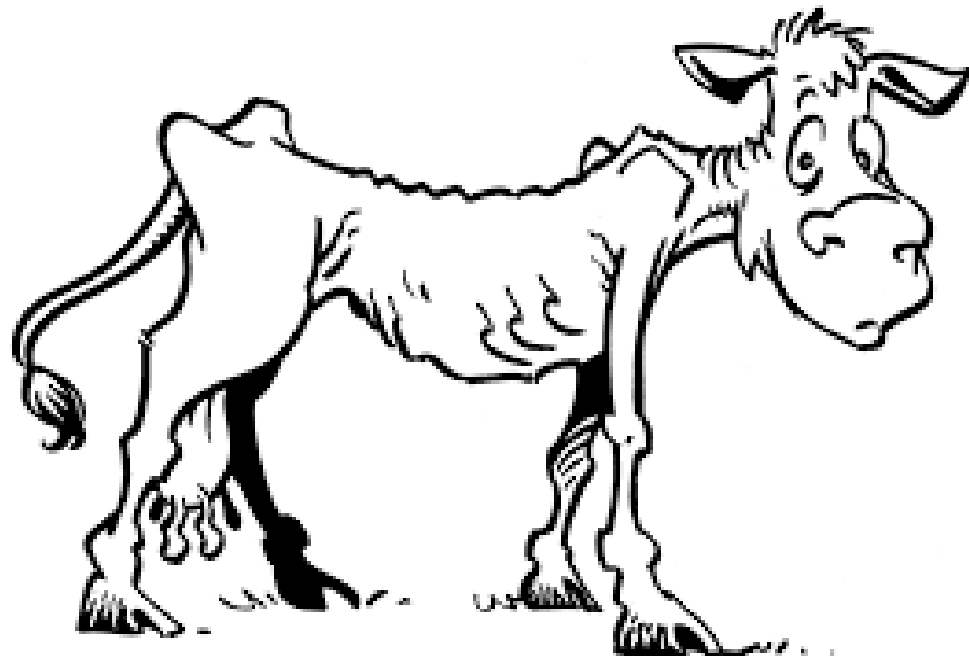
**U.S. Drought Monitor**  
**New Mexico**

**April 5, 2022**  
(Released Thursday, Apr. 7, 2022)  
Valid 8 a.m. EDT



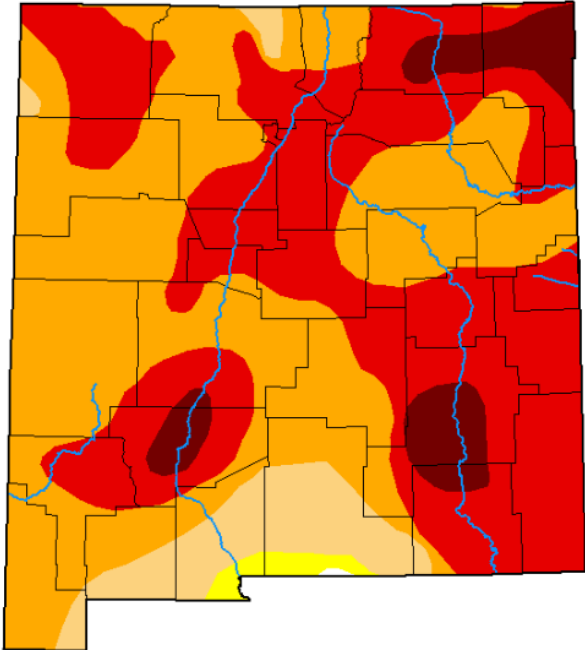
**Intensity:**

-  None
-  D0 Abnormally Dry
-  D1 Moderate Drought
-  D2 Severe Drought
-  D3 Extreme Drought
-  D4 Exceptional Drought



# Climate Indicators?

## U.S. Drought Monitor New Mexico



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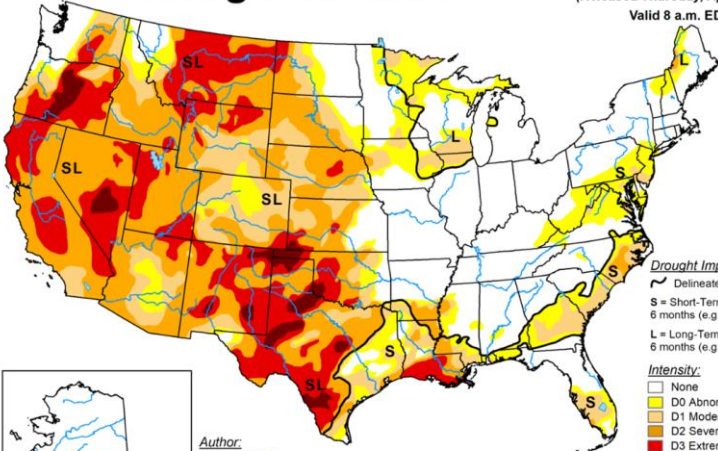
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- None
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The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

## U.S. Drought Monitor

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**Drought Impact Types:**

- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

**Intensity:**

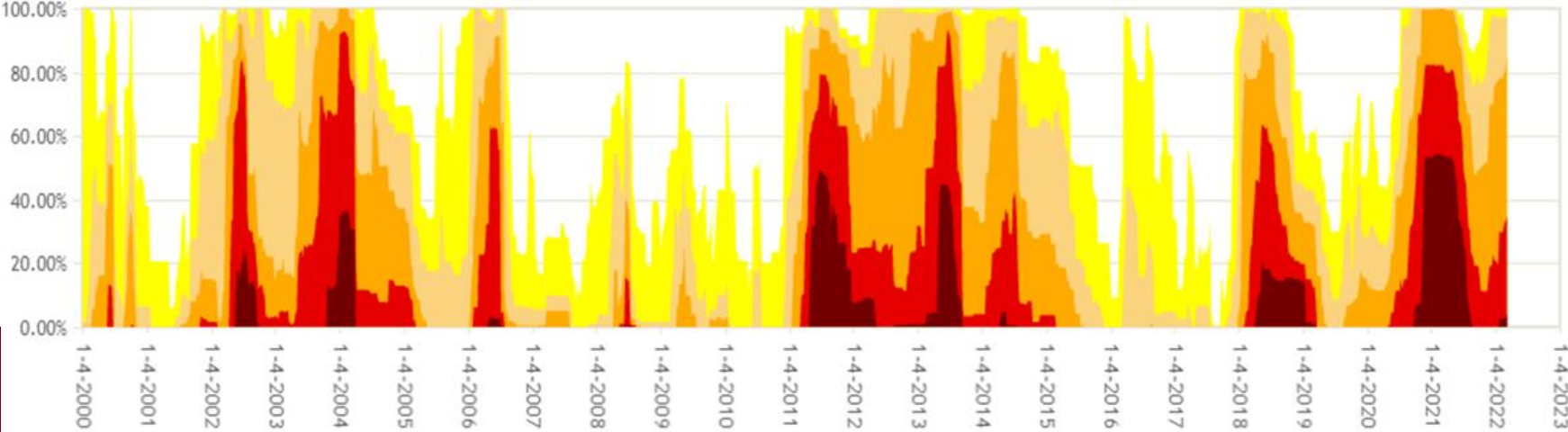
- None
- D0 Abnormally Dry
- D1 Moderate Drought
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- D3 Extreme Drought
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Author:  
Deborah Bathke  
National Drought Mitigation Center

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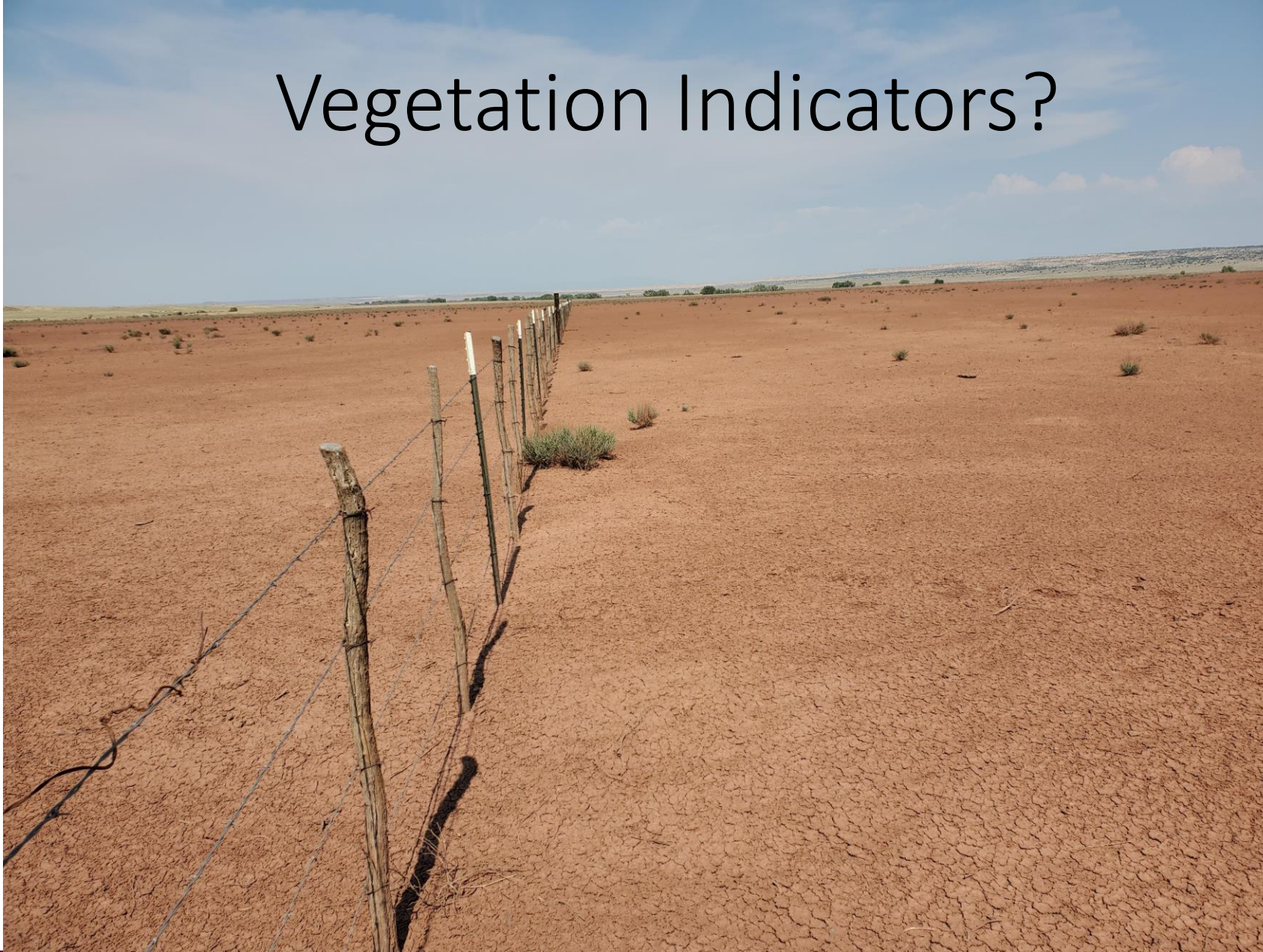
droughtmonitor.unl.edu

## New Mexico Percent Area in U.S. Drought Monitor Categories

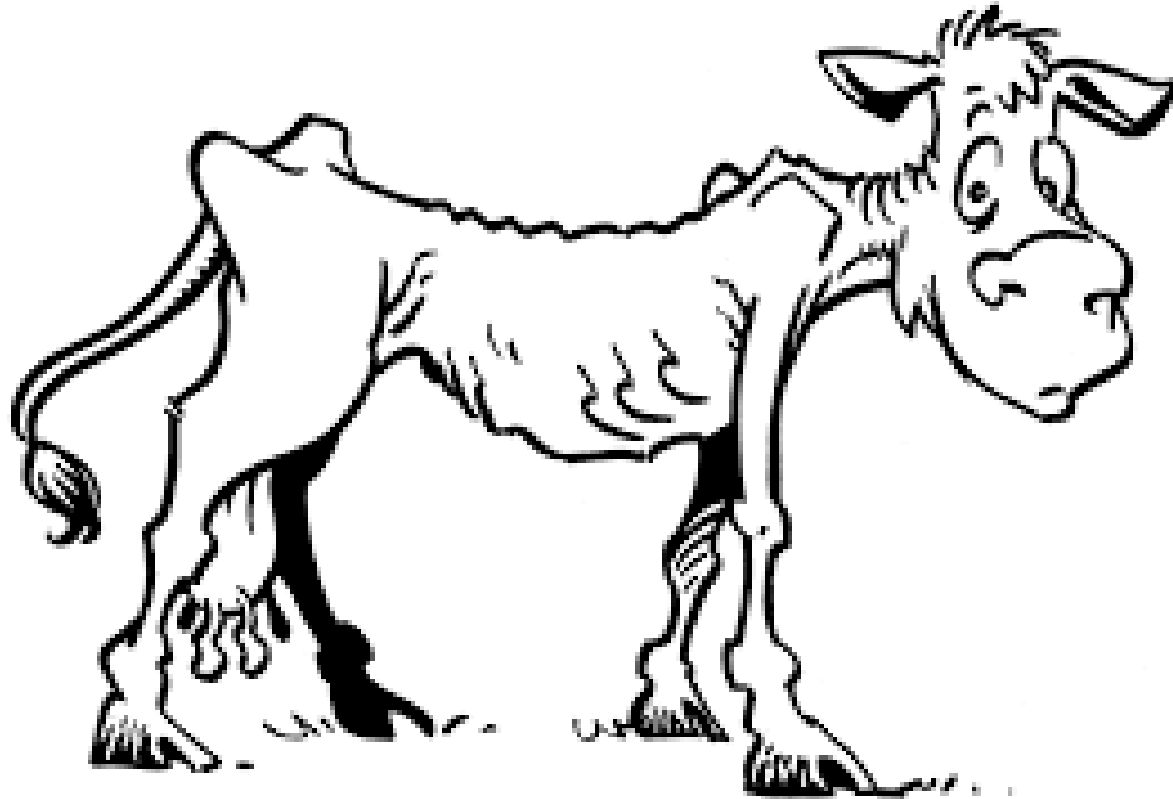


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# Vegetation Indicators?



# Animal Indicators?



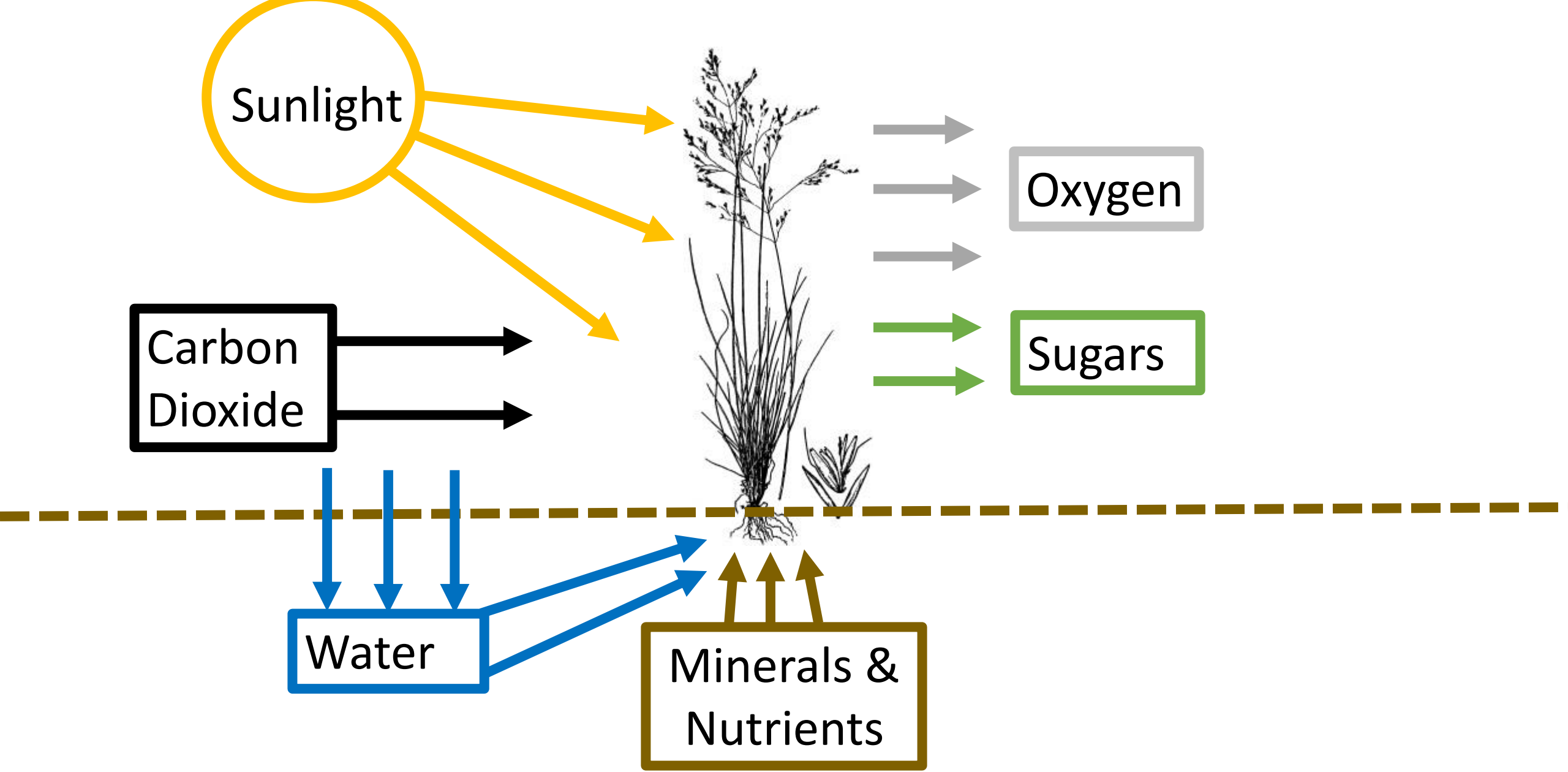
# Lets look at your forages?

Side-oats Grama (*Bouteloua curtipendula* – BOCU)



Three-awn (*Aristida* spp. – ARIST)







Sunlight

Carbon  
Dioxide

Water

Minerals &  
Nutrients

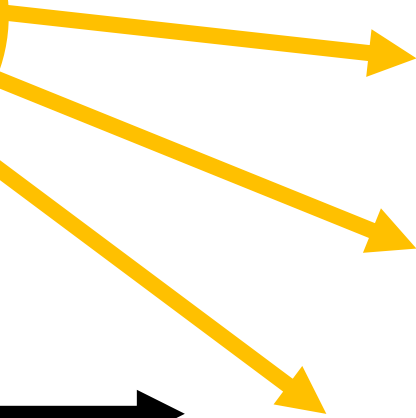
Oxygen

Sugars

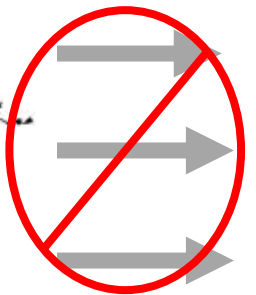
Shoots provide  
processes for root  
reserves  
(photosynthesis)

Roots provide  
nutrients for shoot  
growth (reserves)

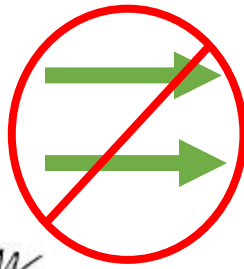
Sunlight



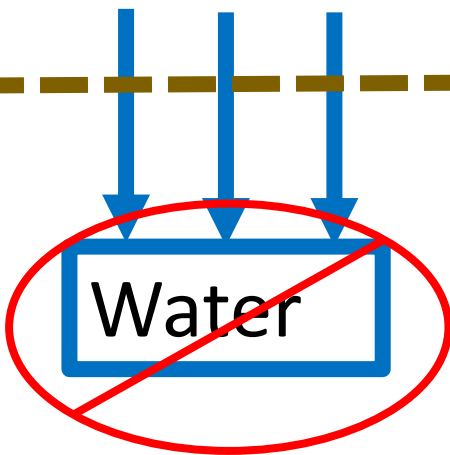
Carbon Dioxide



Oxygen



Sugars



Water



Minerals & Nutrients

Chain Reaction = No Growth

# Drought Fast Facts

- forage production during drought can experience a 7-fold decline (that is without grazing).
- High mortality to range grasses during drought
  - ungrazed 50%
  - grazed >50%



# Drought Fast Facts

-low to moderate grazing in arid systems:

**\*1 year drought = 2 years †recovery**

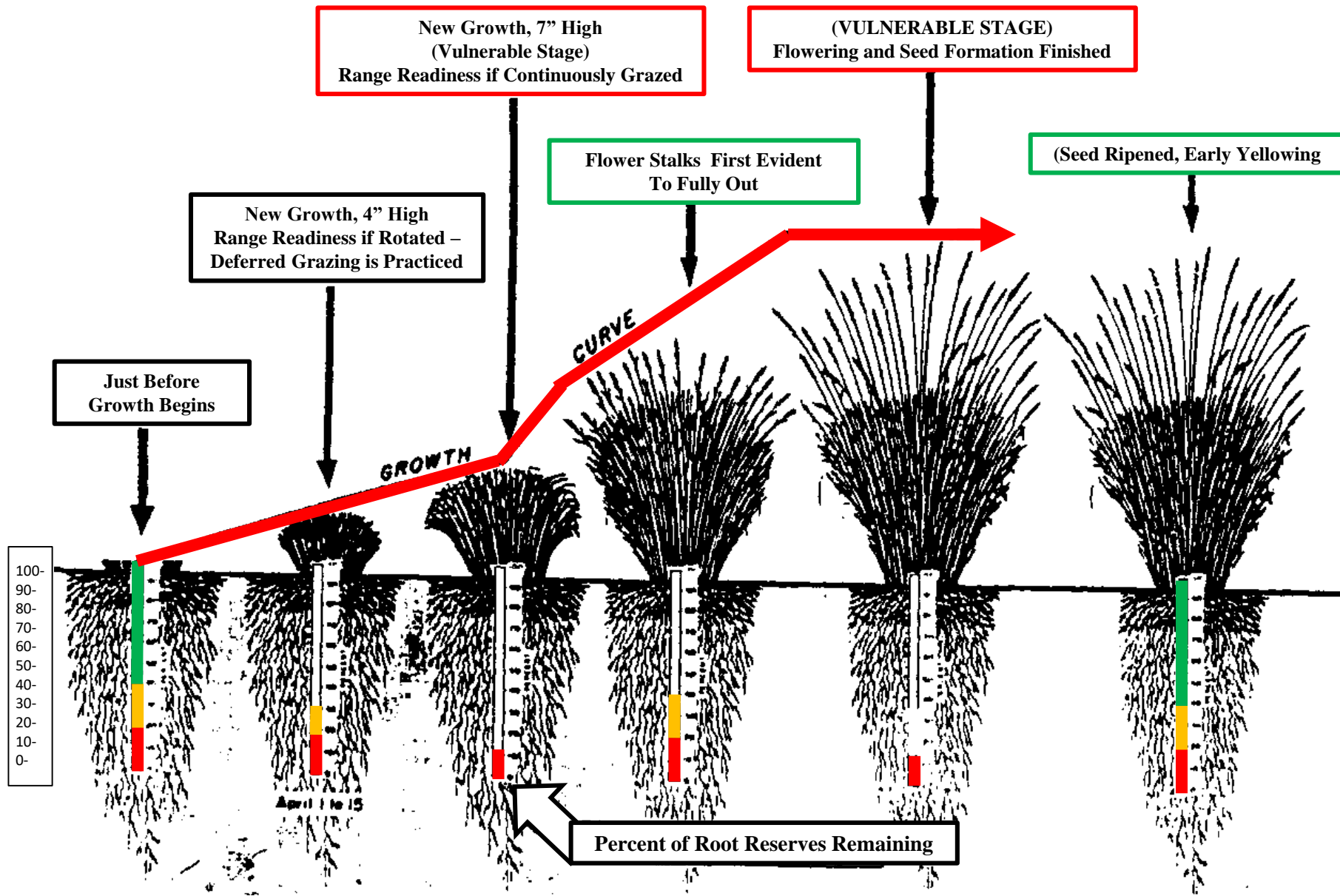
-high to severe grazing in arid systems:

**\*1 year drought = †5+ to NO recovery**

\*with normal annual precipitation

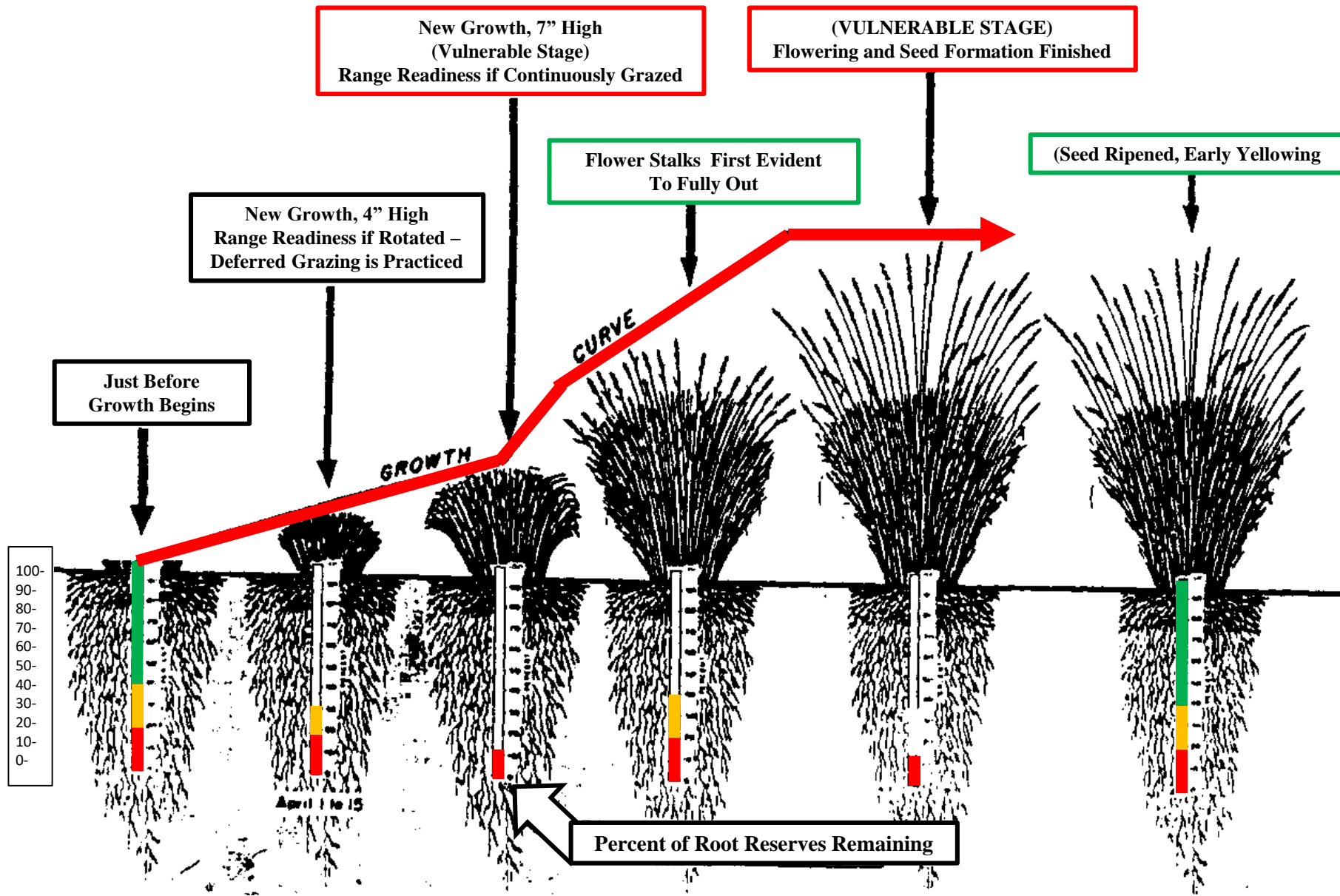
†production levels prior to drought





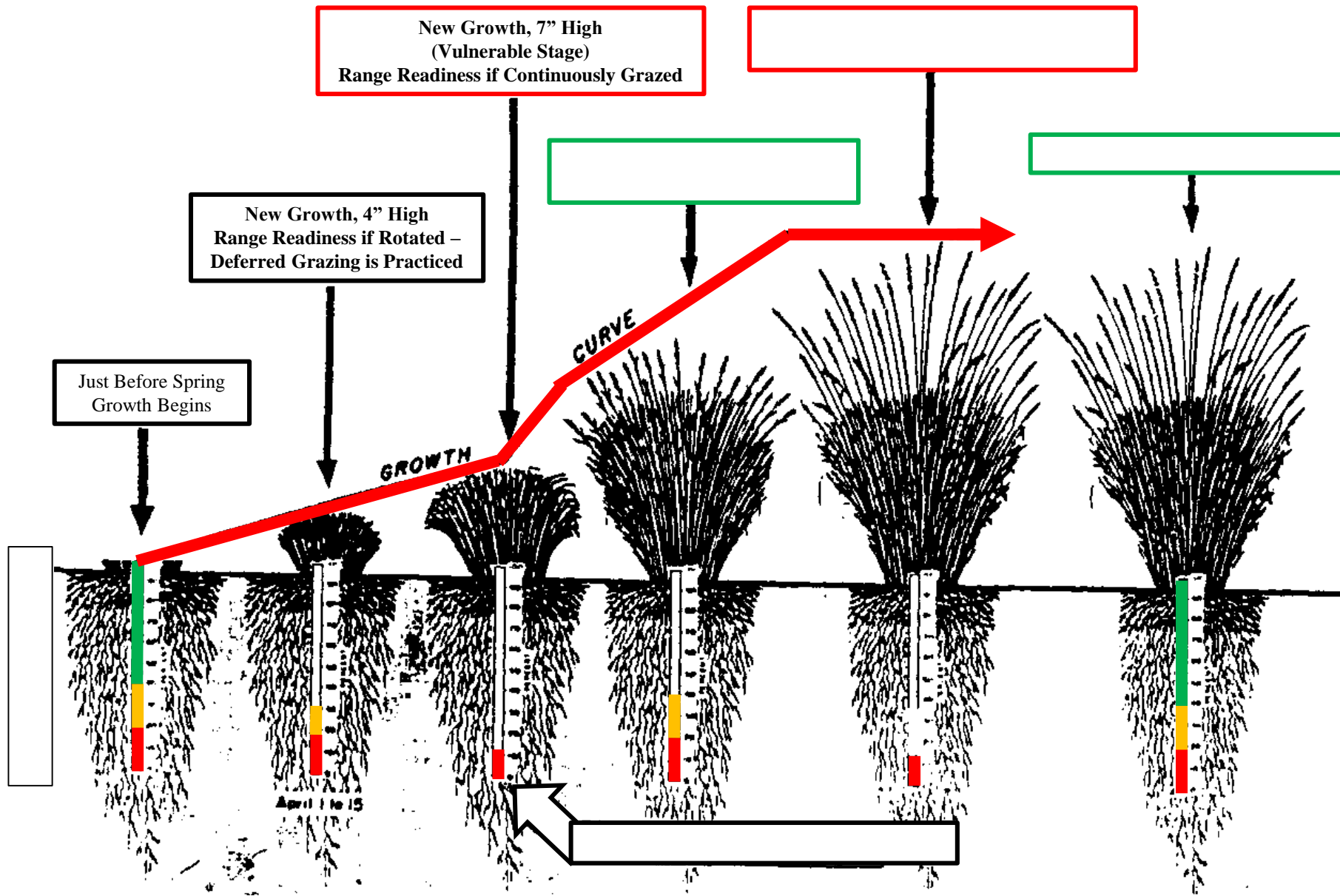
Adapted from SCS, USDA





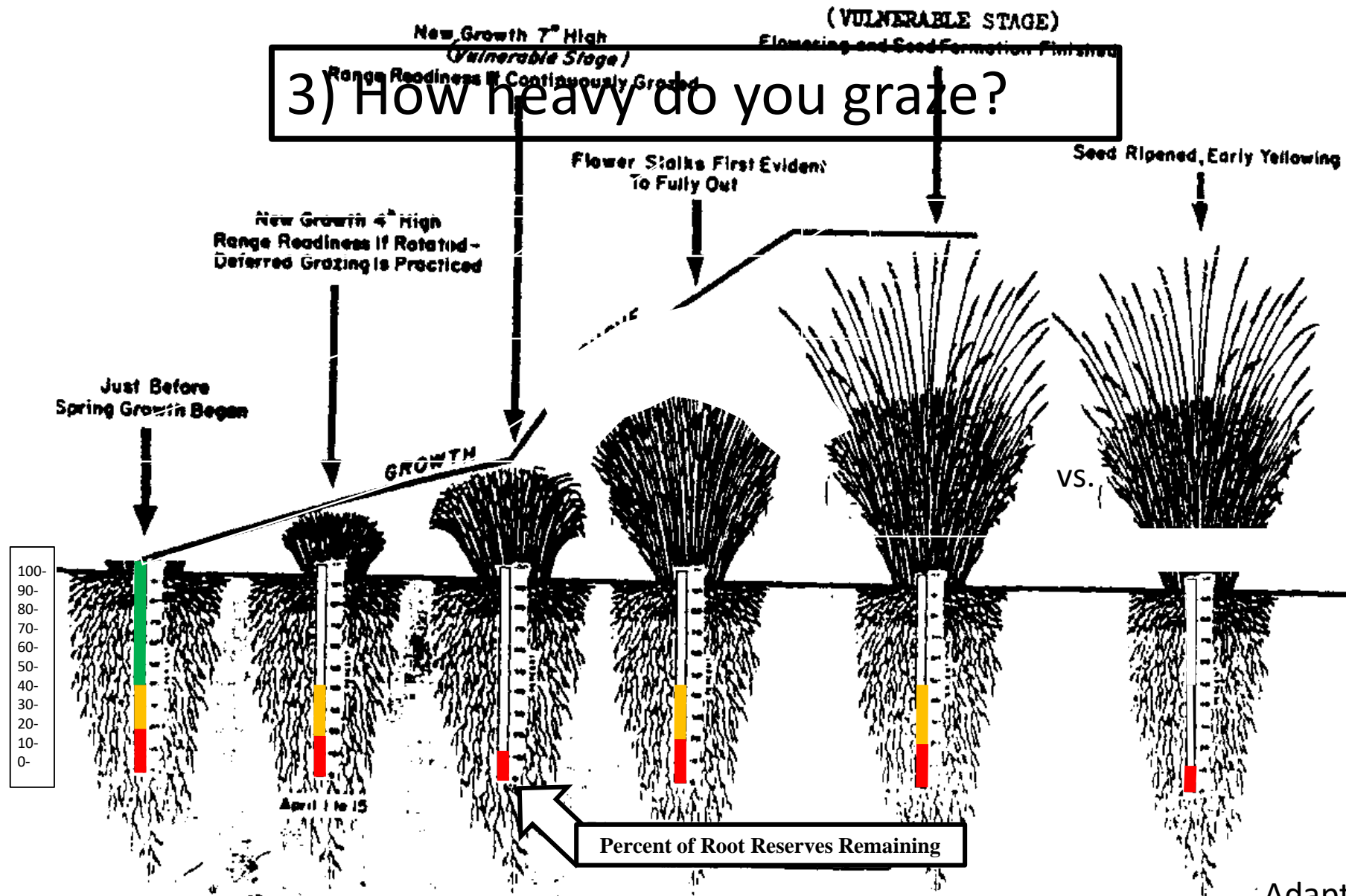
1) When do you graze?

Adapted from SCS, USDA



2) What are your current root nutrient reserves?

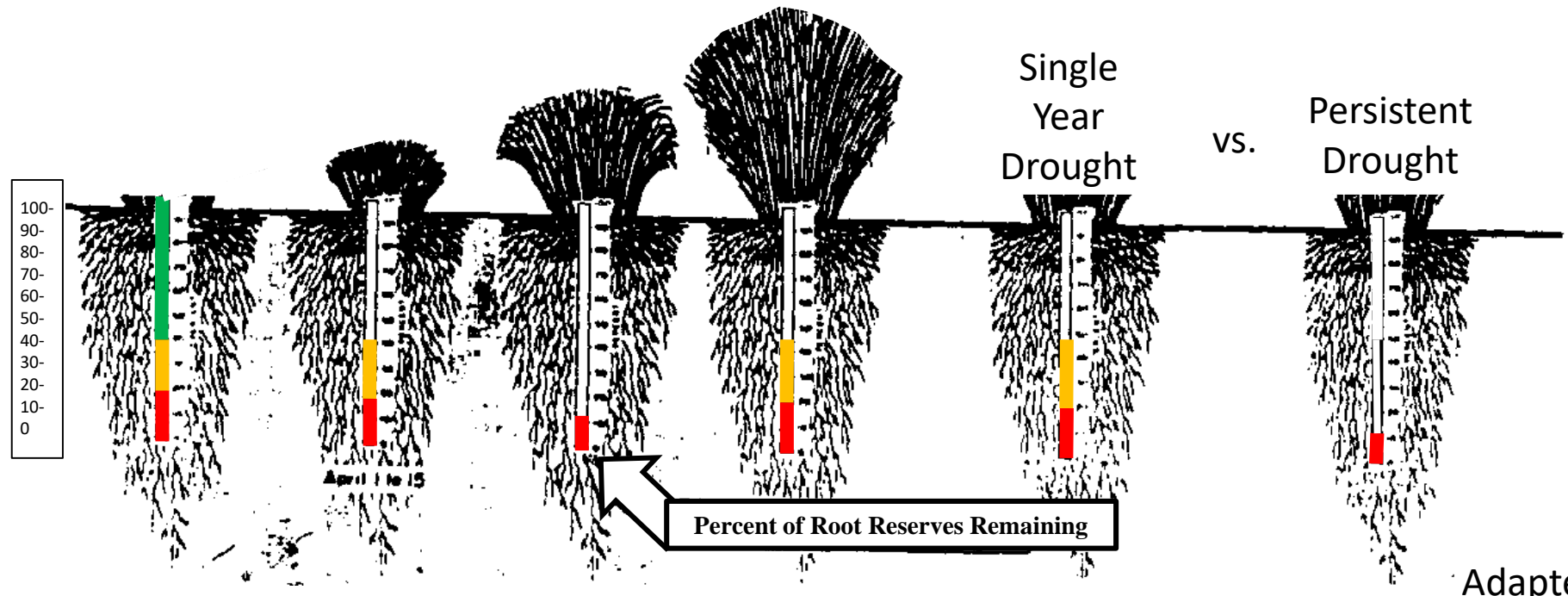
Adapted from SCS, USDA



Adapted from SCS, USDA

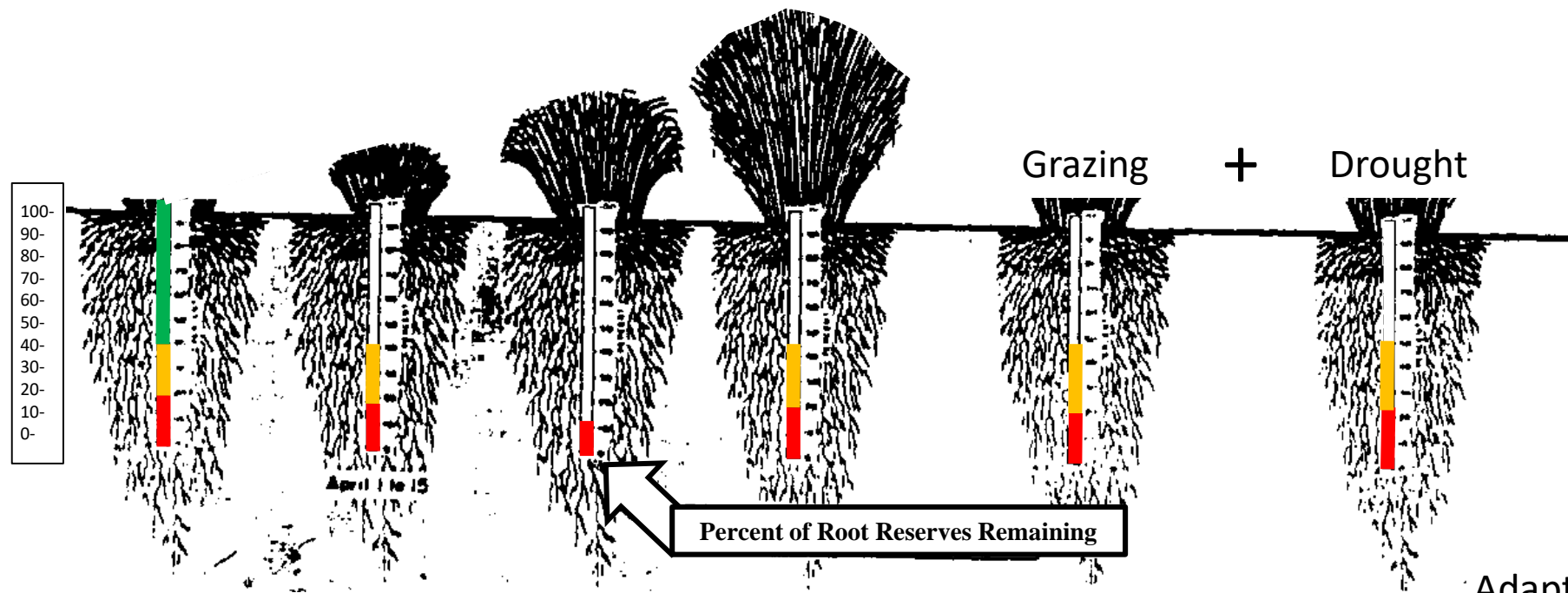


# 4) How Severe is the Drought?



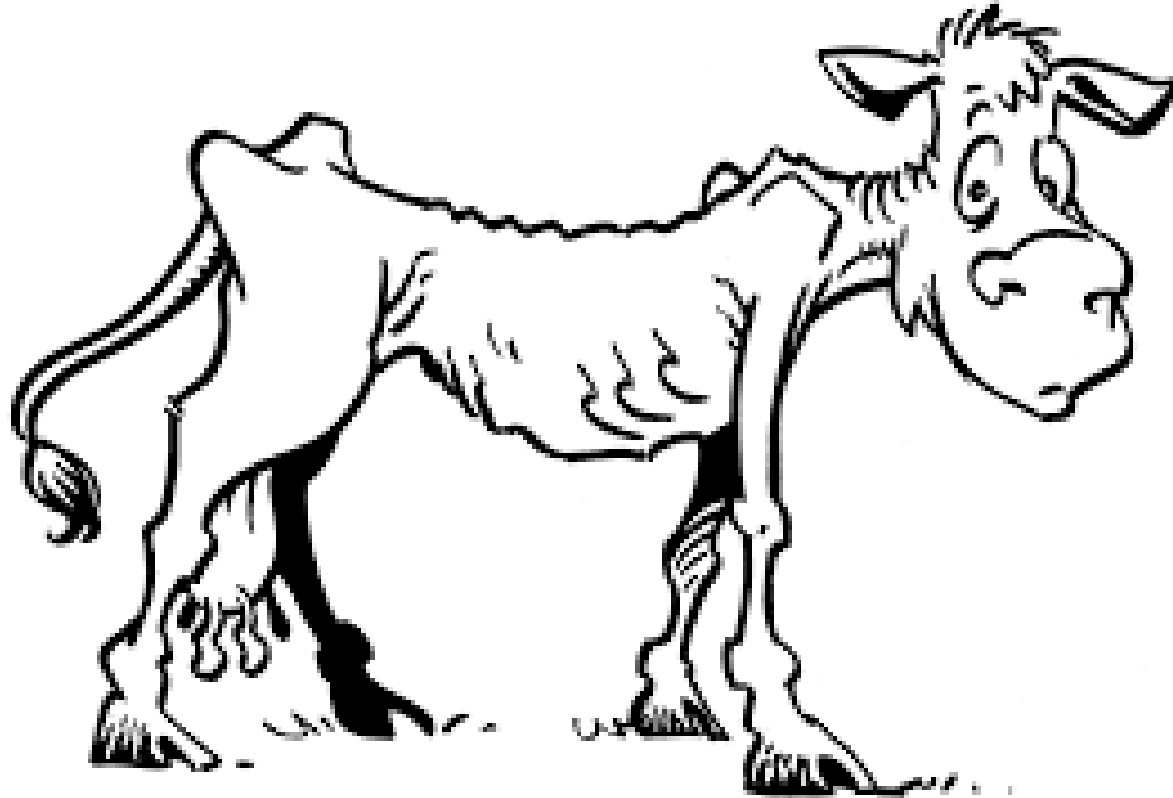
Adapted from SCS, USDA

# The Compounding Effect



Adapted from SCS, USDA

# Let's Look at the Animal?



# Managing and Feeding Beef Cows Using Body Condition Scores

Revised by Marcy Ward<sup>1</sup>

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## INTRODUCTION

One of the greatest challenges facing cow-calf producers is maintaining a defined and short calving season. Maintaining a short calving season gives producers the ability to strategically manage their cow herd and to market uniformly aged calves



(Photo by Marcy Ward)

at weaning. Strategic management includes a goal-oriented, low-cost nutrition program designed to meet the specific needs of all cows at the same time. With a short calving season, the cows are all in a similar production stage (lactation, gestation, etc.) at a given time during the production year. This makes developing a targeted nutrition program much easier and more efficient. Nutrient supplementation is typically the producer's largest variable cost and is highly influenced by the environment. During periods of drought or excessive snow cover, or when low-quality forage cannot meet nutritional needs, beef producers must intervene by providing additional feed, leasing extra pasture, or selling a portion of the cow herd to maintain balance with the range resource and meet production goals. Intervention of this nature is expensive and, therefore, must generate a positive return on the investment.

A cow's reproductive performance is closely associated with her body energy reserves. To help the beef industry communicate information relating animal performance to a cow's degree of body energy reserves, a numerical body condition scoring (BCS) system was developed. Understanding this scoring system gives producers a tool to develop and monitor their cow herd management program. This publication describes the BCS system, and the influence of energy reserves on reproductive performance, calf vigor, and health. Monitoring body condition of a cow herd can improve the efficiency of overall management strategies.

<sup>1</sup>Extension Livestock Specialist, Department of Extension Animal Sciences and Natural Resources, New Mexico State University.

**Table 1. Description of the Body Condition Scoring System**

Score	Description
1	Severely emaciated. All ribs and bone structure easily visible. Physically weak; animal has difficulty standing or walking. No external fat present by sight or touch.
2	Emaciated. Similar to 1, but not weakened.
3	Very thin. No visible fat on the ribs or brisket. Individual muscles in the hindquarters are easily visible, and spinous processes are very apparent.
4	Thin. Ribs and pin bones are easily visible, and fat is not apparent by palpation of ribs or pin bones. Individual muscles in the hindquarters are apparent.
5	Ribs are less apparent than in 4, and there is less than 0.2 inches of fat over the ribeye. Last two or three ribs can be felt easily. No fat in the brisket. At least 0.4 inches of fat can be palpated over pin bones. Individual muscles in the hindquarters are not apparent.
6	Smooth appearance throughout. Some fat deposition in the brisket. Individual ribs are not visible. About 0.4 inches of fat on the pin bones and on the last two or three ribs.
7	Brisket is full. Tail head and pin bones have protruding fat deposits on them. Back appears square due to fat. Indentation over the spine due to fat on each side. Between 0.4 and 0.8 inches of fat on the last two to three ribs.
8	Obese. Back is very square. Brisket is distended with fat. Large protruding deposits of fat on tail head and pin bones. Neck is thick. Between 1.2 and 1.8 inches of fat on the last three ribs. Large indentation over the spine.
9	Very obese. Description similar to 8, but taken to a greater extreme.





Drought =

decreased forage nutrition

decreased forage abundance =

Reduced Cattle Gains/condition

Increased Poison Cases

Seek out food to meet dietary needs – plants that usually are not consumed

## Poisonous Plants



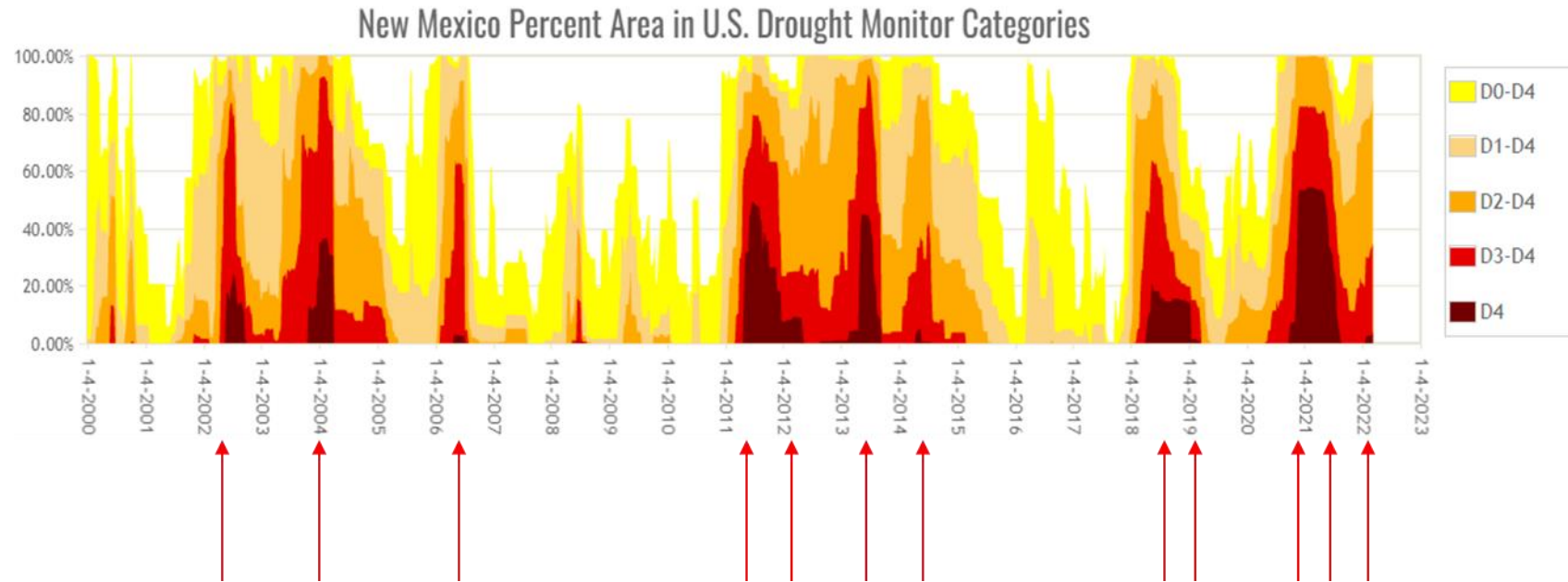
# What about water sources?



Photo Credit: [extension.usu.edu](http://extension.usu.edu)

- Limited quantity
- Mineral accumulation
- Locality & distance of livestock travel
- Temperature and Bacteria

# How often does drought occur in NM?



60%



# The only way to know is through Measurable Indicators: **Planning & Monitoring**

- Vegetation Trends (5-10 year record)
- Grazing Records (are there areas underutilized)
- Water Assessment
- Livestock Records
- Weather Records
- Soil Characteristics

# What vegetation assessment is most important during drought?

- #1 - Biomass (clip and weight)
- #2 - Stubble Heights
  
- Extra:
  - Photo-points
  - Cover
  - Species Composition

# Biomass Availability



## CALCULATING AVAILABLE FORAGE

Mindy Pratt and G. Allen Rasmussen

Range Management Fact Sheet

May 2001

NR/RM/03

**TABLE 5: Range Hoop and Square Conversions and Dimensions**

**0.96 ft<sup>2</sup> Plot:**

Conversion Factor: Grams collected X 100 = pounds per acre  
Radius = 0.55 feet  
Circumference of Hoop = 3.5 ft  
Dimensions of Square Plot = .98 ft x .98 ft

**1.92 ft<sup>2</sup> Plot:**

Conversion Factor: Grams collected X 50 = pounds per acre  
Radius = 0.78 feet  
Circumference of Hoop = 4.9 ft  
Dimensions of Square Plot = 1.386 ft x 1.386 ft

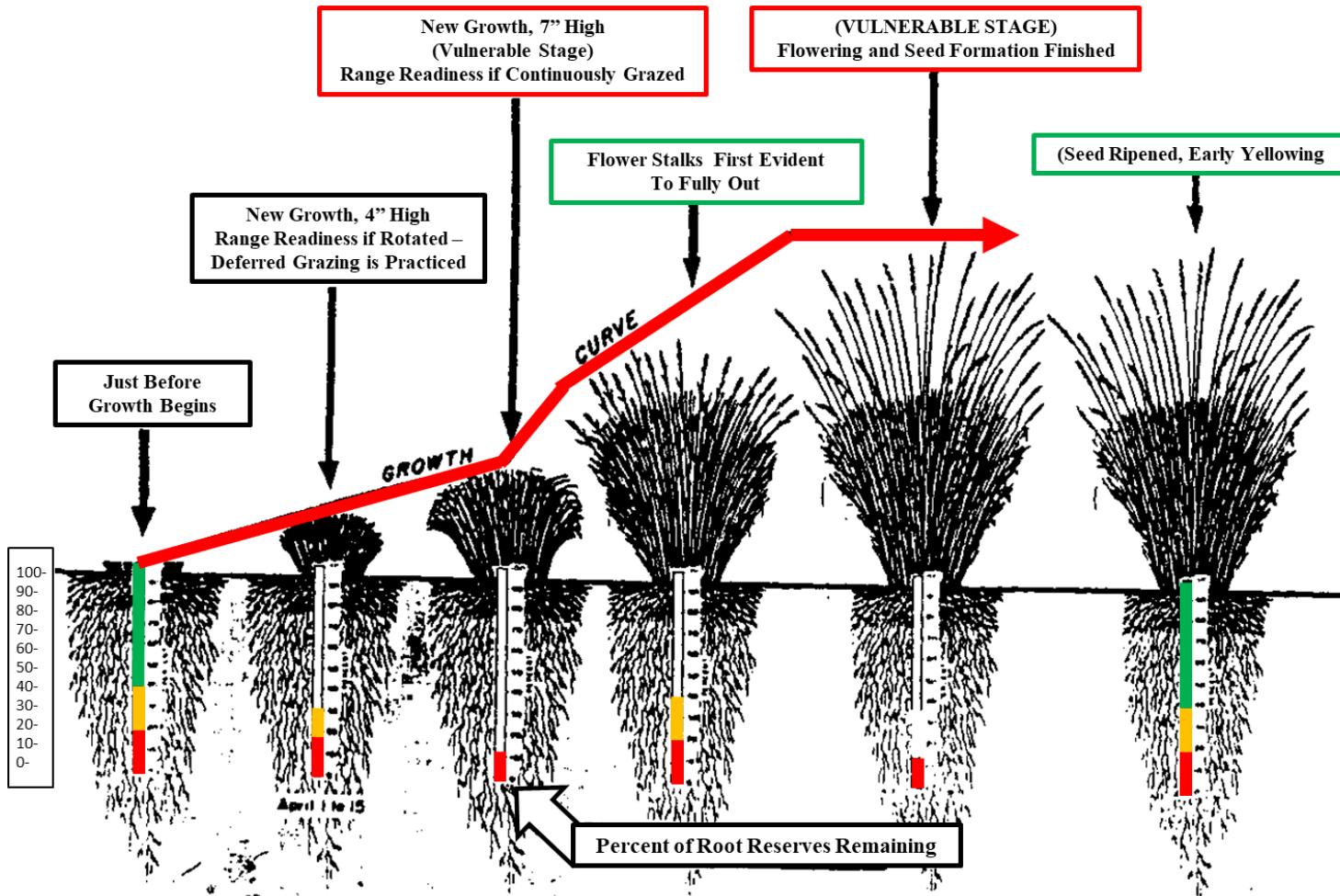
**2.40 ft<sup>2</sup> Plot:**

Conversion Factor: Grams collected X 40 = pounds per acre  
Radius = 0.87 feet  
Circumference of Hoop = 5.5 ft  
Dimensions of Square Plot = 1.55 ft x 1.55 ft

- Clip
- Dry
- Weigh (grams)
- Record



# Biomass Availability



- Above-ground generally equals below-ground

- Potential stocking rate (lbs/acre)

Adapted from SCS, USDA

# Considerations for Drought Planning

1. Have a drought management plan!
2. Never try to feed out of drought! Leads to overgrazing, deteriorated forage and range deterioration, bankrupt ranch.
3. Do I need to adjust my stocking rates? – Diversify your herd (cow/calf vs stockers). **Herd flexibility and maintain genetics**
4. What forage alternatives do I have/can provide? Drought reserve pasture? – **buy time, minimize overgrazing**
5. Have a destocking plan in writing: identify critical dates for **1) market prices, 2) grass growth**
6. Can I wean early? 33% reduction in forage and water consumption
7. Based on the data, can we improve grazing distribution to offset detrimental impacts of drought? – **buy time, minimize overgrazing**

# Don't give into green fever!

- Increasing herd #'s after drought is bad management.
- What if the drought persists?
- 1 year drought = 2 years of grass recovery



**INTRODUCTION**

One of the largest management challenges faced on a ranch in arid regions is balancing between grass supply and demand. Grass supply is influenced by the timing and amount of precipitation during the growing season and the grazing management implemented by the ranch manager. Many ranch managers find themselves worrying more about the weather than about implementing a grazing management plan that will focus on maintaining sustainable grazing resources during both normal and dry conditions. Therefore, this publication will focus on developing a better understanding of the impacts of drought on native rangelands and cattle performance, and how to manage rangelands and cattle during and between droughts in arid regions.



NMSU photo by Nick Ashcroft

There are many approaches to defining drought, none of which satisfy all situations. For more on this topic, see NMSU Extension Guide B-825, *Defining Drought on New Mexico Rangelands* ([http://aces.nmsu.edu/pubs/\\_b/B825.pdf](http://aces.nmsu.edu/pubs/_b/B825.pdf)). Meteorological droughts are often defined as periods where moisture supply falls below a climatically set threshold, whereas an agricultural drought may be defined as a period of inadequate soil moisture for the needs of crops or growing native grass. However, it is not until the human population experiences shortages of water that affect quality of life and the demand of product (socio-economic drought) that society and government begin to understand the impacts of drought. Regardless of the definition, those who live in arid regions recognize that in a majority of years these regions will experience periods of below-normal precipitation. Rangeland managers in arid climates have come to recognize it is not a matter of **if** but **when** the next drought will begin. Therefore, planning for drought is an important component in

sustainable range management, which equals sustainable ranch operations.

Planning and preparing for extended dry periods in arid regions should be a beef business requisite. However, when extended dry periods are encountered, drier than normal conditions are commonly talked about, but the response seldom seems to be quick enough to sustain both native rangelands and an adequate cattle inventory. It is critical to begin assessing and responding to the situation and to recognize both the short- and long-term impacts of drought on native rangelands, livestock, and the economics of a grazing operation.

**IMPACTS OF DROUGHT ON RANGE RESOURCES**

While most ranch managers understand the general scope of drought, it is important to respect the impacts

<sup>1</sup>Extension Range Management Specialist, Department of Extension Animal Sciences and Natural Resources, New Mexico State University.

To find more resources for your business, home, or family, visit the College of Agricultural, Consumer and Environmental Sciences on the World Wide Web at [aces.nmsu.edu](http://aces.nmsu.edu)

# Resources

B-818: Using a Supplementation Program as a Grazing Management Tool

[http://aces.nmsu.edu/pubs/\\_b/B818/welcome.html](http://aces.nmsu.edu/pubs/_b/B818/welcome.html)

CR-374: New Mexico Range Plants

[http://aces.nmsu.edu/pubs/\\_circulars/cr-374/welcome.html](http://aces.nmsu.edu/pubs/_circulars/cr-374/welcome.html)

CR-649: Developing a Grazing System for Arid Climates

[http://aces.nmsu.edu/pubs/\\_b/B806/welcome.html](http://aces.nmsu.edu/pubs/_b/B806/welcome.html)

# QUESTIONS?

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