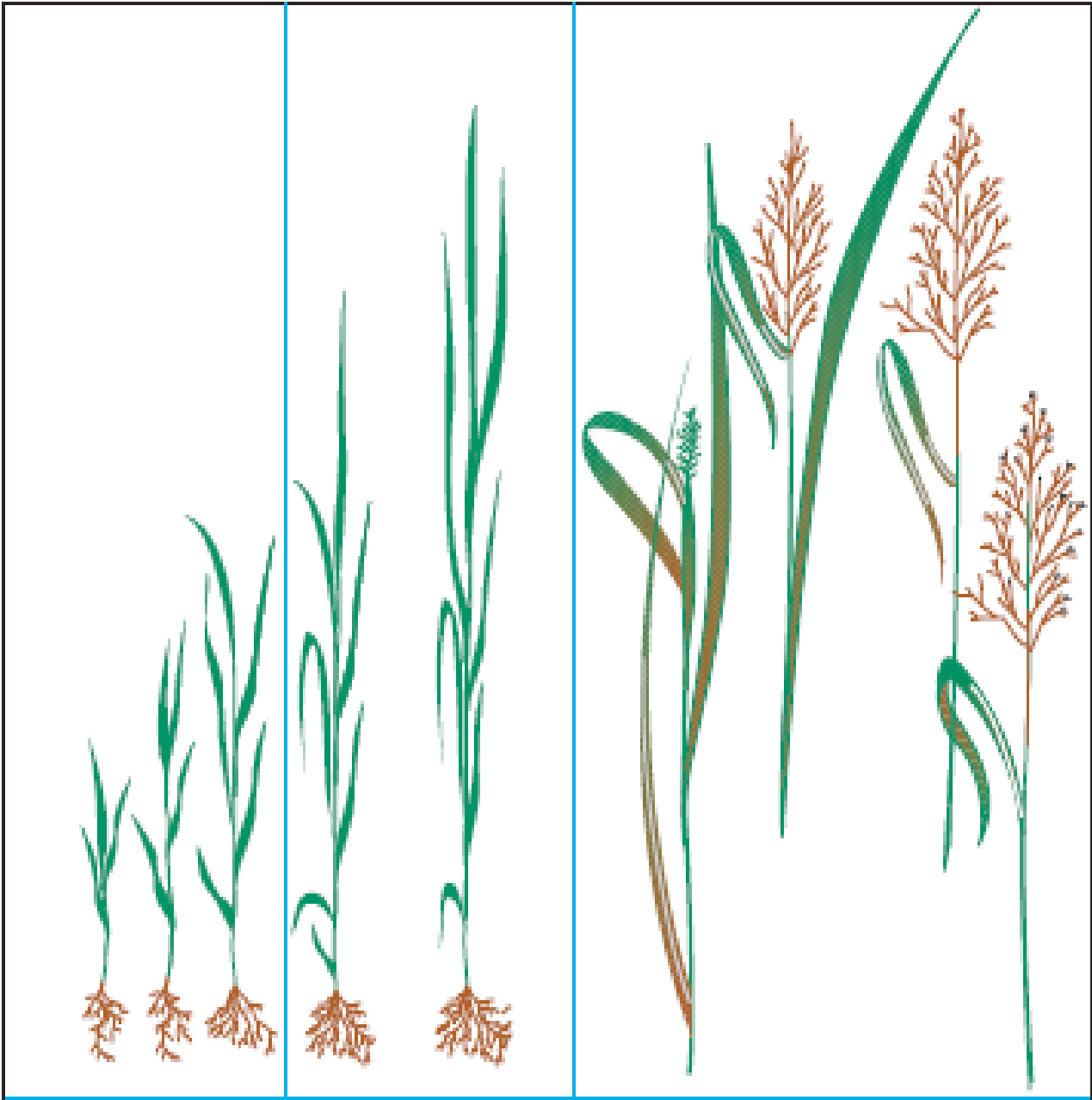


# Plant Response to Defoliation



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Ranch Practicum – 2023



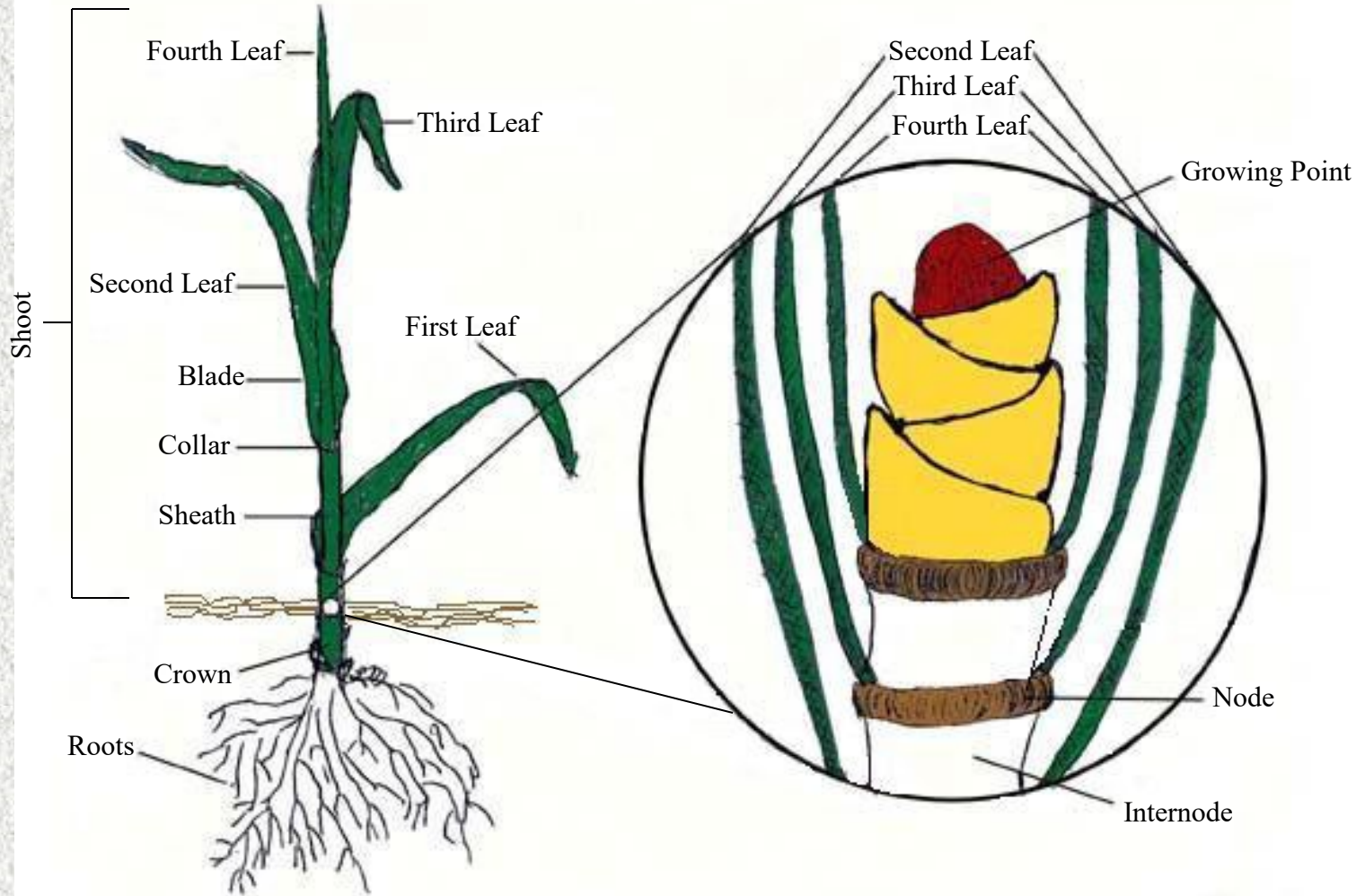
**VEGETATIVE**

**ELONGATION**

**REPRODUCTIVE**



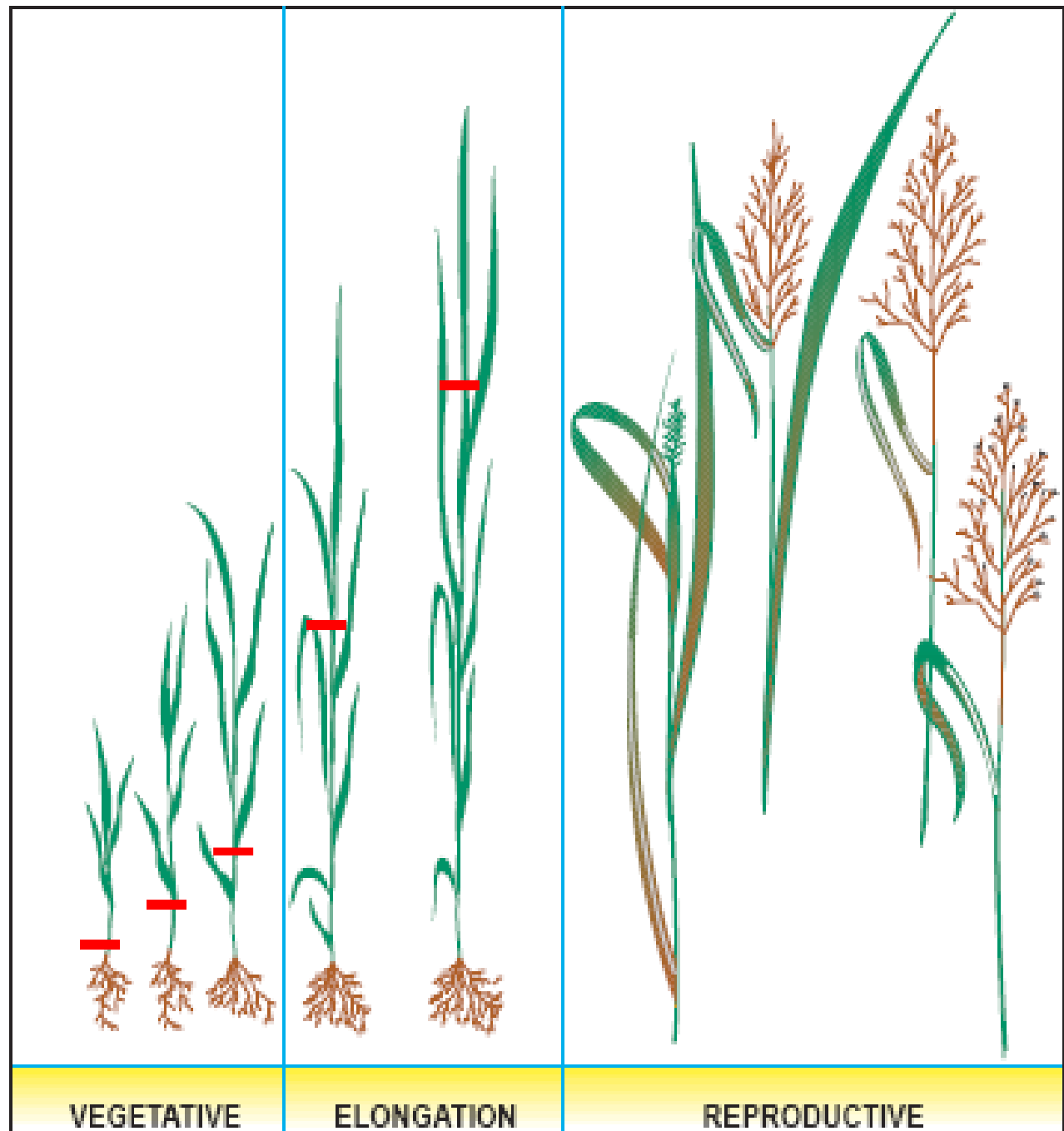
# Vegetative Tiller



**Growing Point  
(Primordium)**



**— = Growing point**



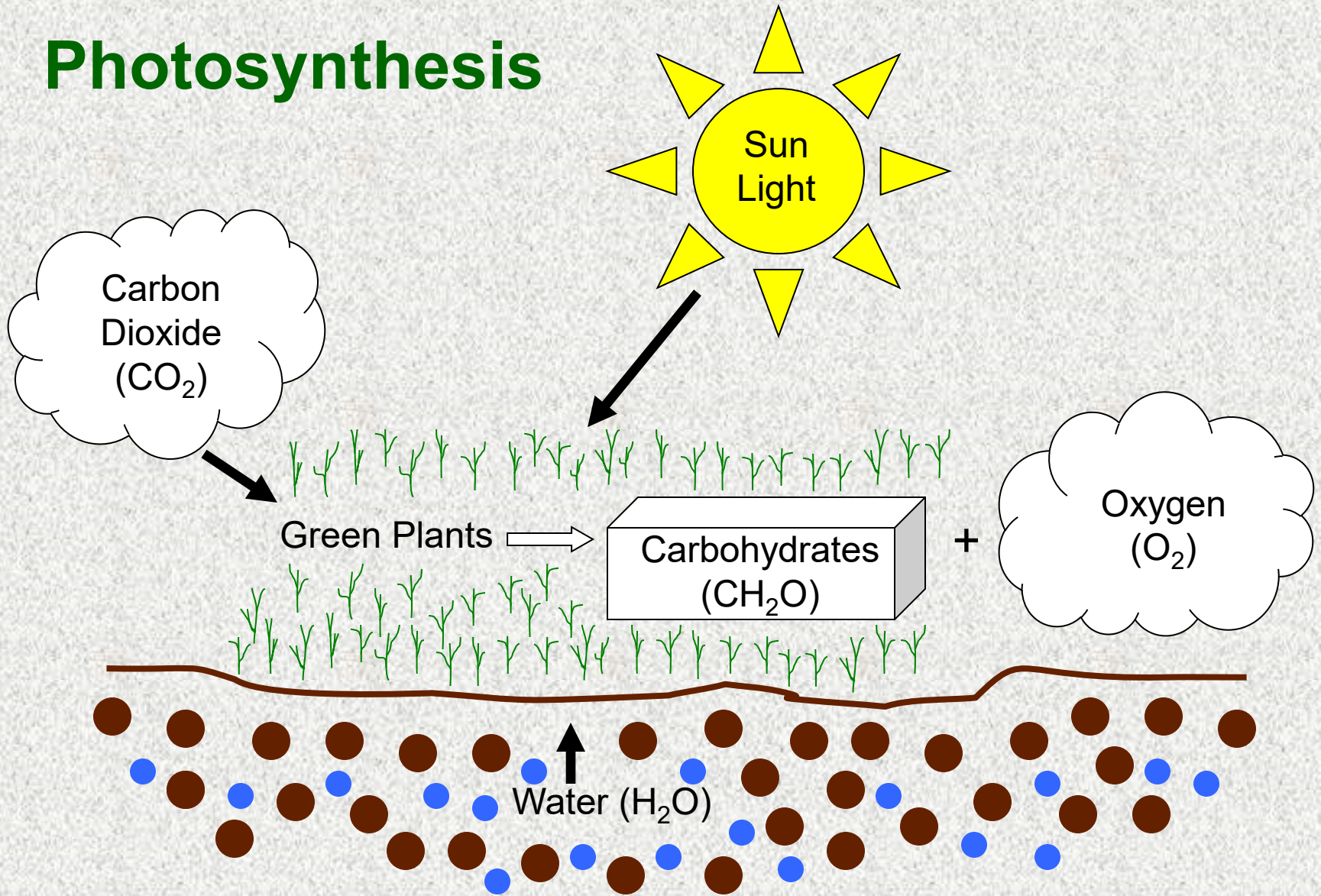


**What 2 environmental variables must be simultaneous favorable before plants can grow rapidly?:**

- 1. Soil fertility & moisture**
- 2. Soil moisture & air temperature**
- 3. Air temperature & soil fertility**



# Photosynthesis



# Plant Carbohydrates

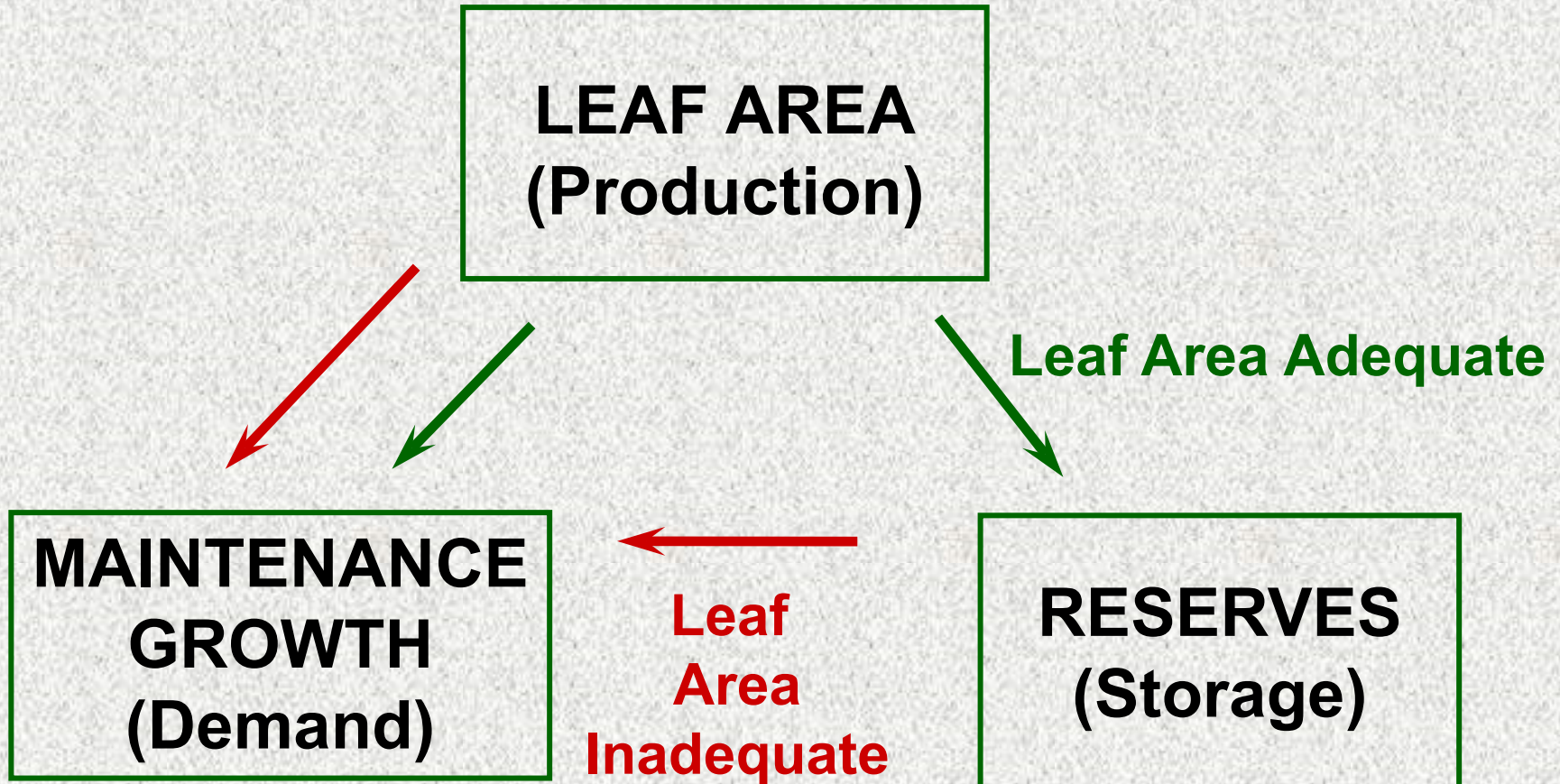
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- **Sink**: (place where carbohydrates are sent)
  - seed heads
  - growing areas, points
  - storage organs (roots, crown)
- **Source**:
  - leaves
  - storage organs (if needed)



# Plant Carbohydrates

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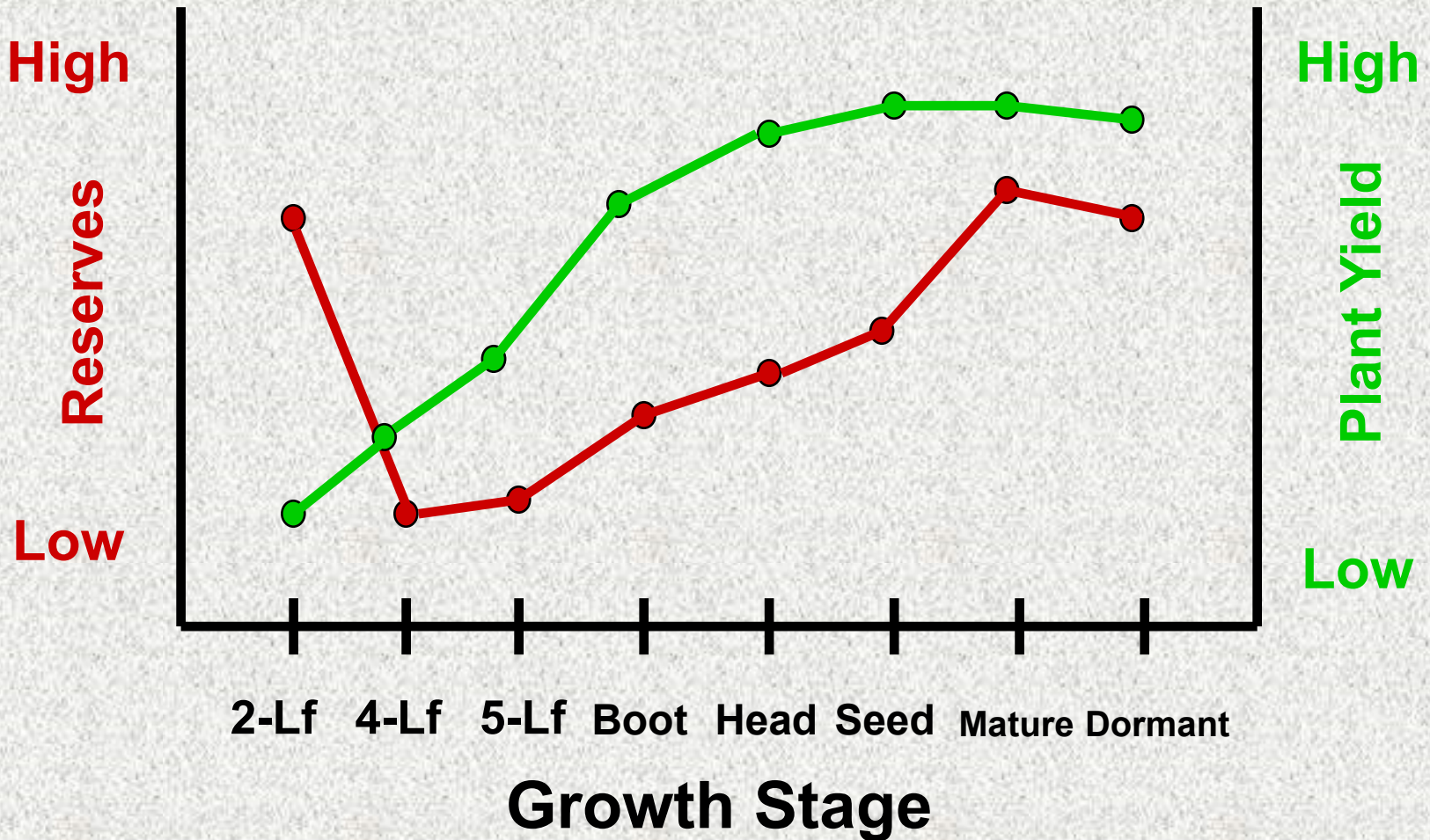




**Carbohydrate reserves in a warm-season grass would typically be at their highest level in?**

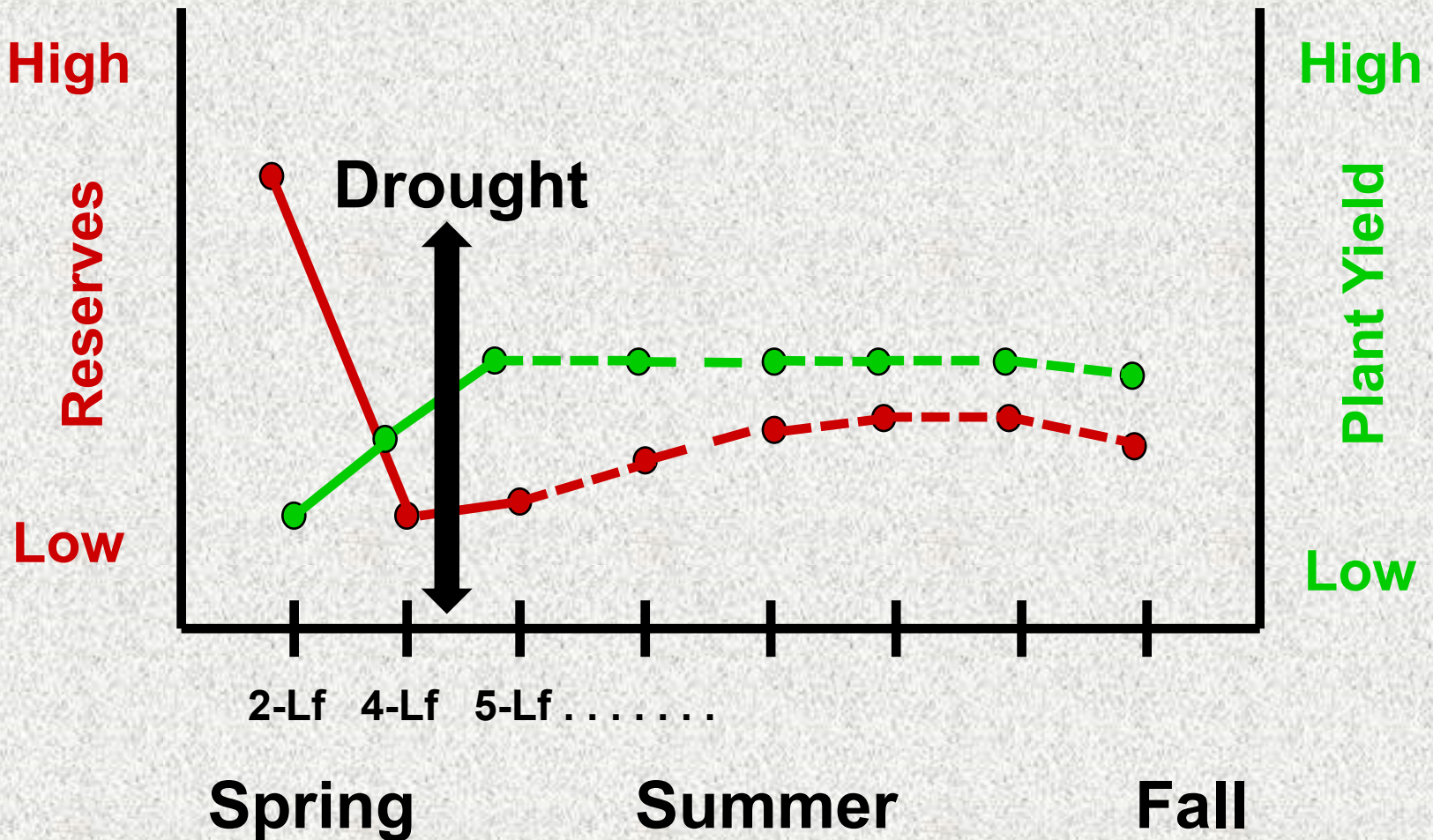
- 1. June**
- 2. July**
- 3. August**

# Carbohydrate reserves and perennial plant yield in relation to growth stage





# Carbohydrate reserves (●—●) and perennial plant yield (●—●) in relation to growth stage



# Carbohydrate Storage Reserves

---

- **Locations :** stem bases, roots, stolons, rhizomes
- **During shortage:**
  - Root growth stops
  - Bud, tiller, and rhizome production is reduced
  - Yield is reduced
  - Plant may be killed by some environmental factor

# **Carbohydrates = Vigor !!**

---

**Grazing management affects carbohydrates through:**

- **When we graze**
- **How much we graze**
- **How often we graze**



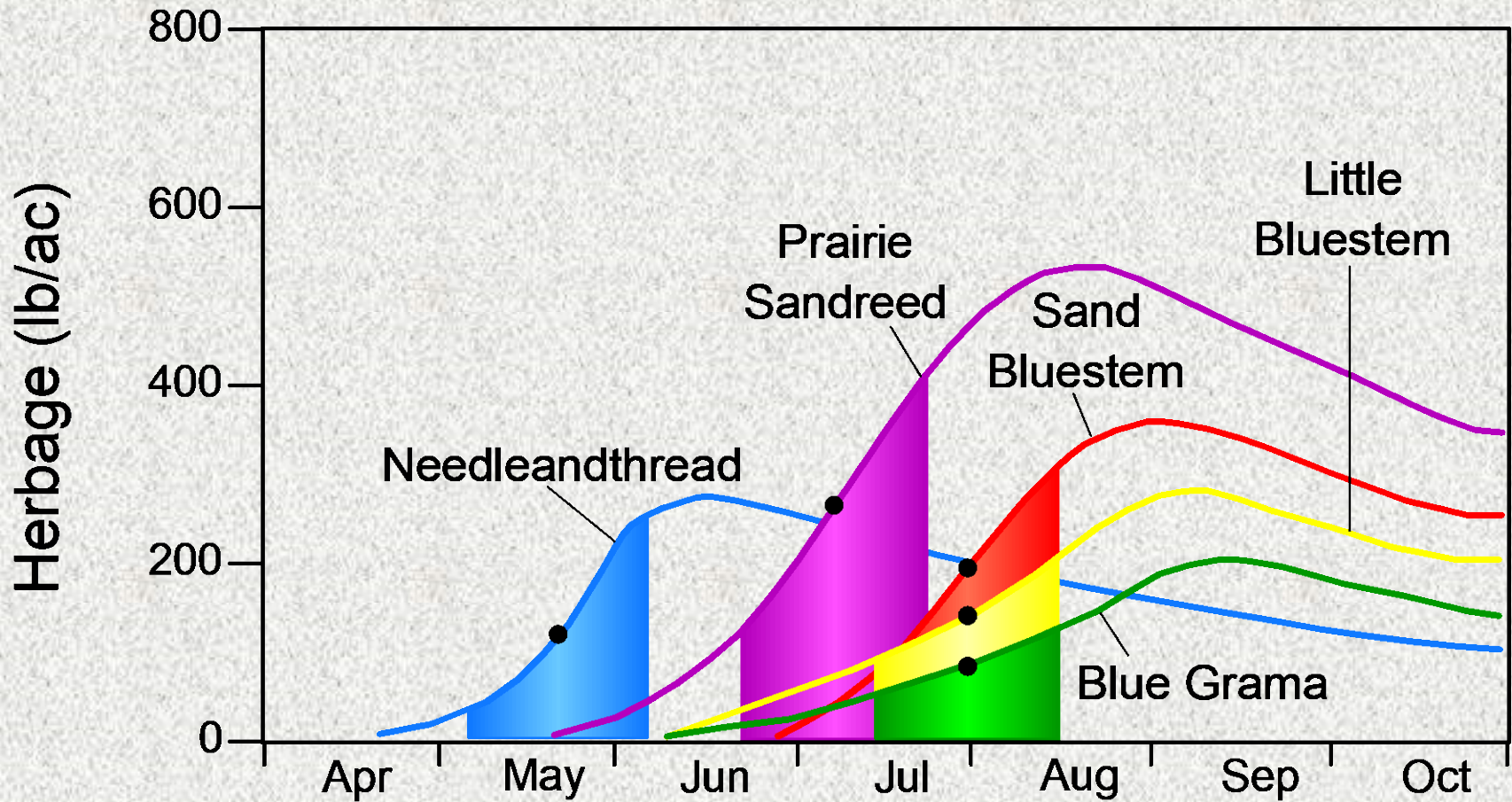
A photograph of three cows in a lush green field. Two brown cows are standing, and one white cow is lying down. The background shows rolling green hills with some erosion patterns. The text "When we graze (season of use)" is overlaid in white at the bottom left.

**When we graze  
(season of use)**





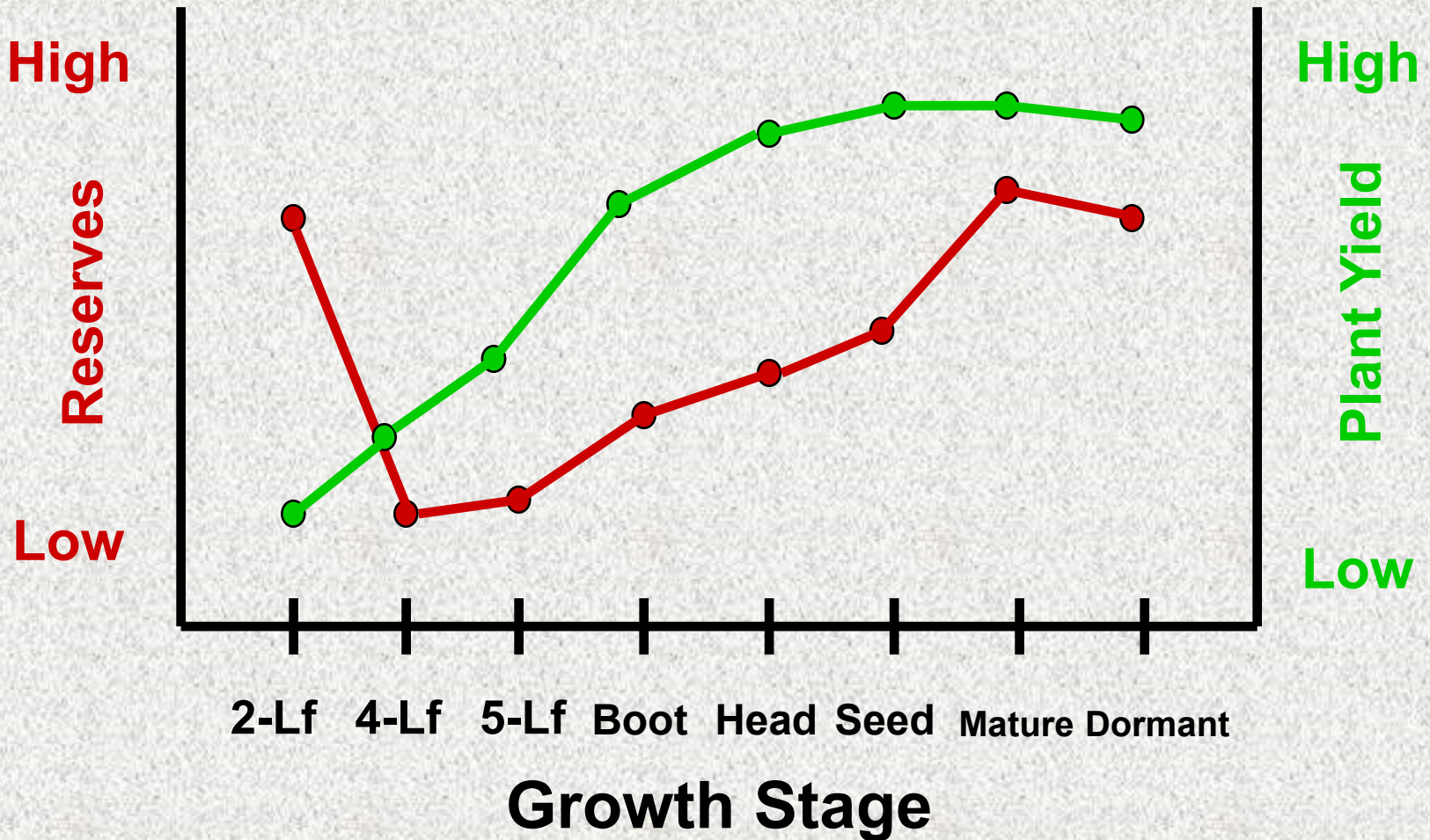
# Growth of important Sandhills forage grasses



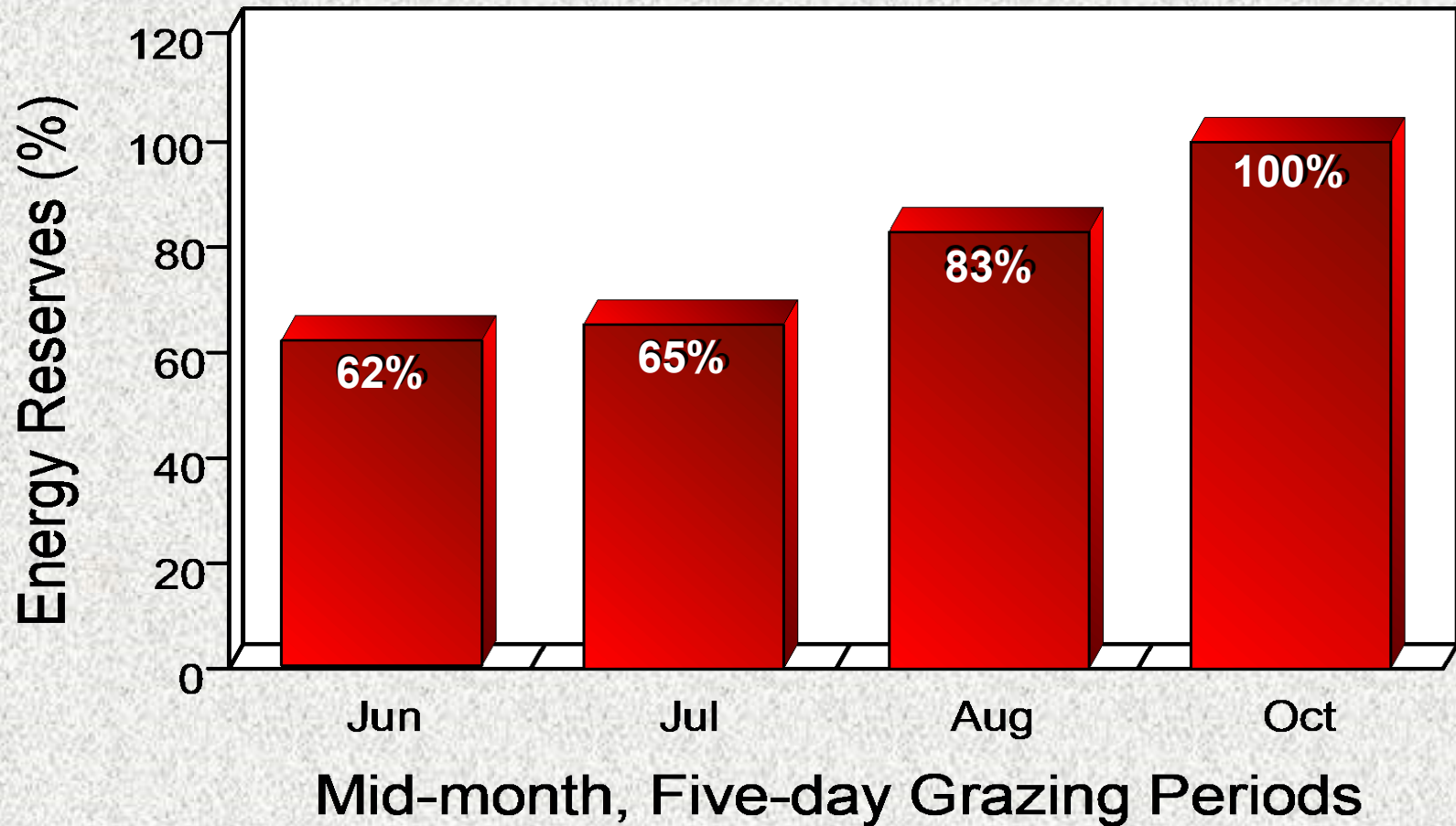
(modified from Reece et al. 2007)



# Carbohydrate reserves and perennial plant yield in relation to growth stage

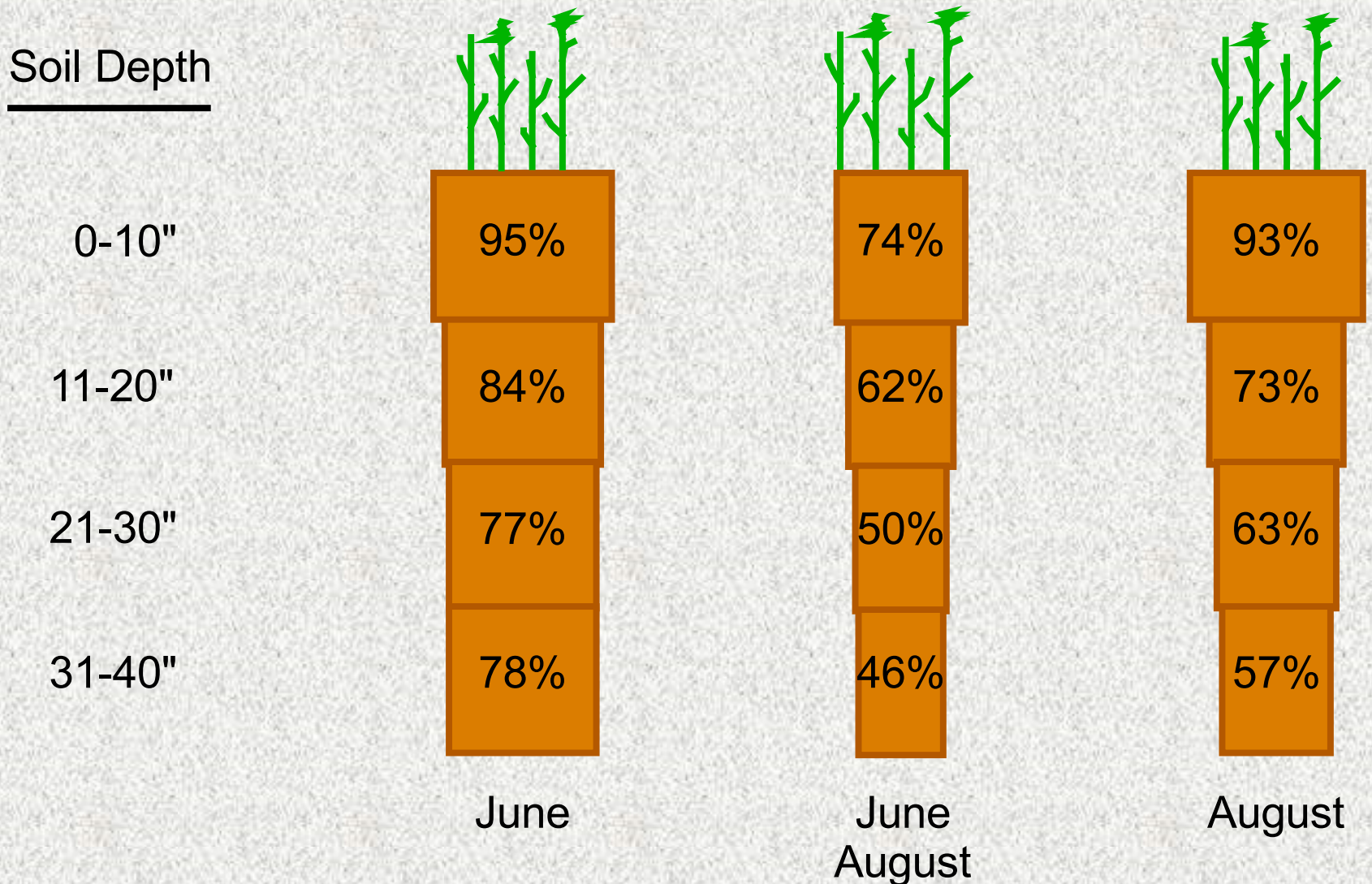


# Prairie Sandreed



From: Reece et al.

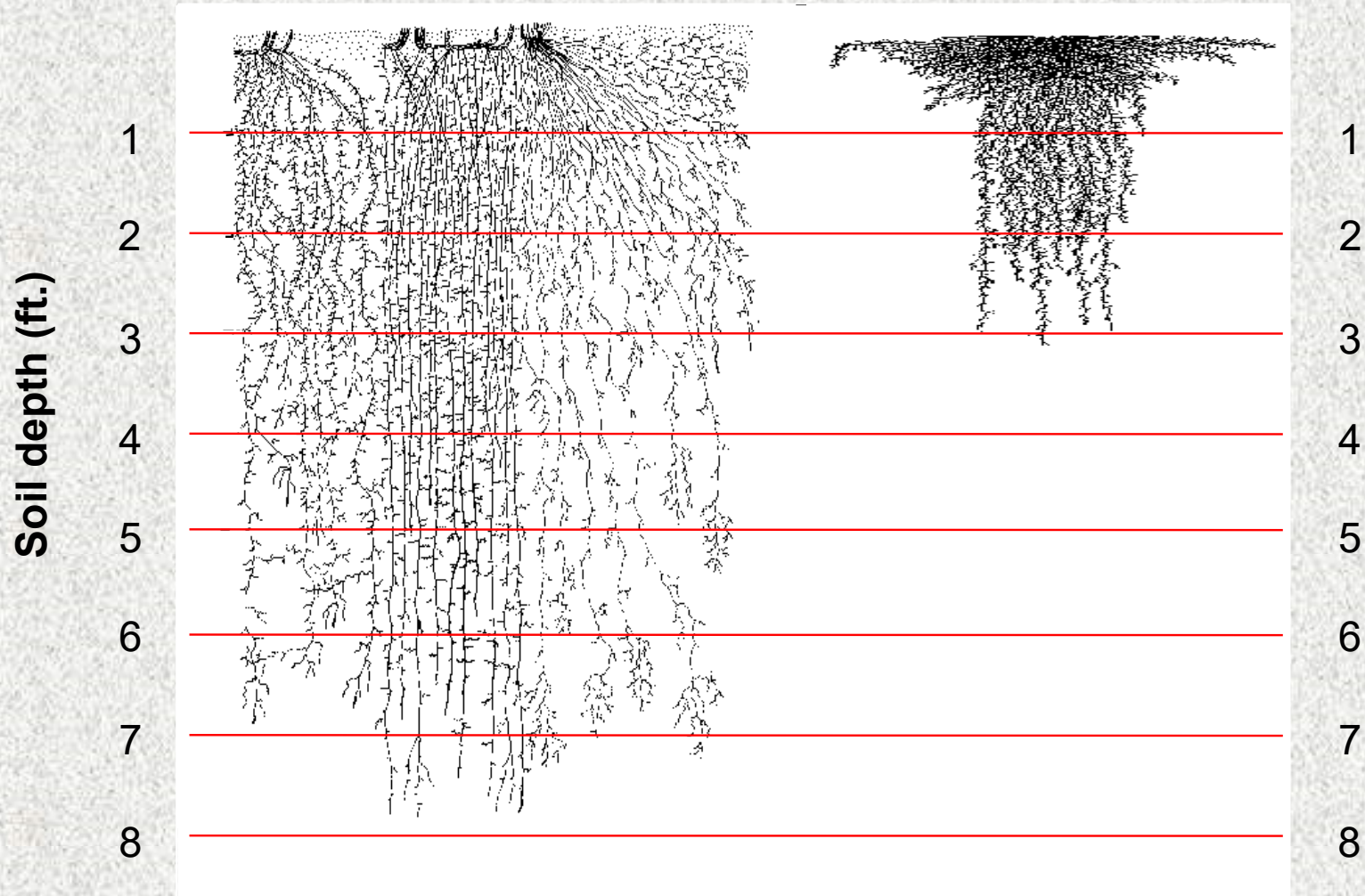
# Prairie Sandreed: Root mass compared to ungrazed control





# Roots: Water and nutrient intake

Sand Prairie Little Blue Blue Grama  
Bluestem Sandreed Bluestem



# Prairie Sandreed

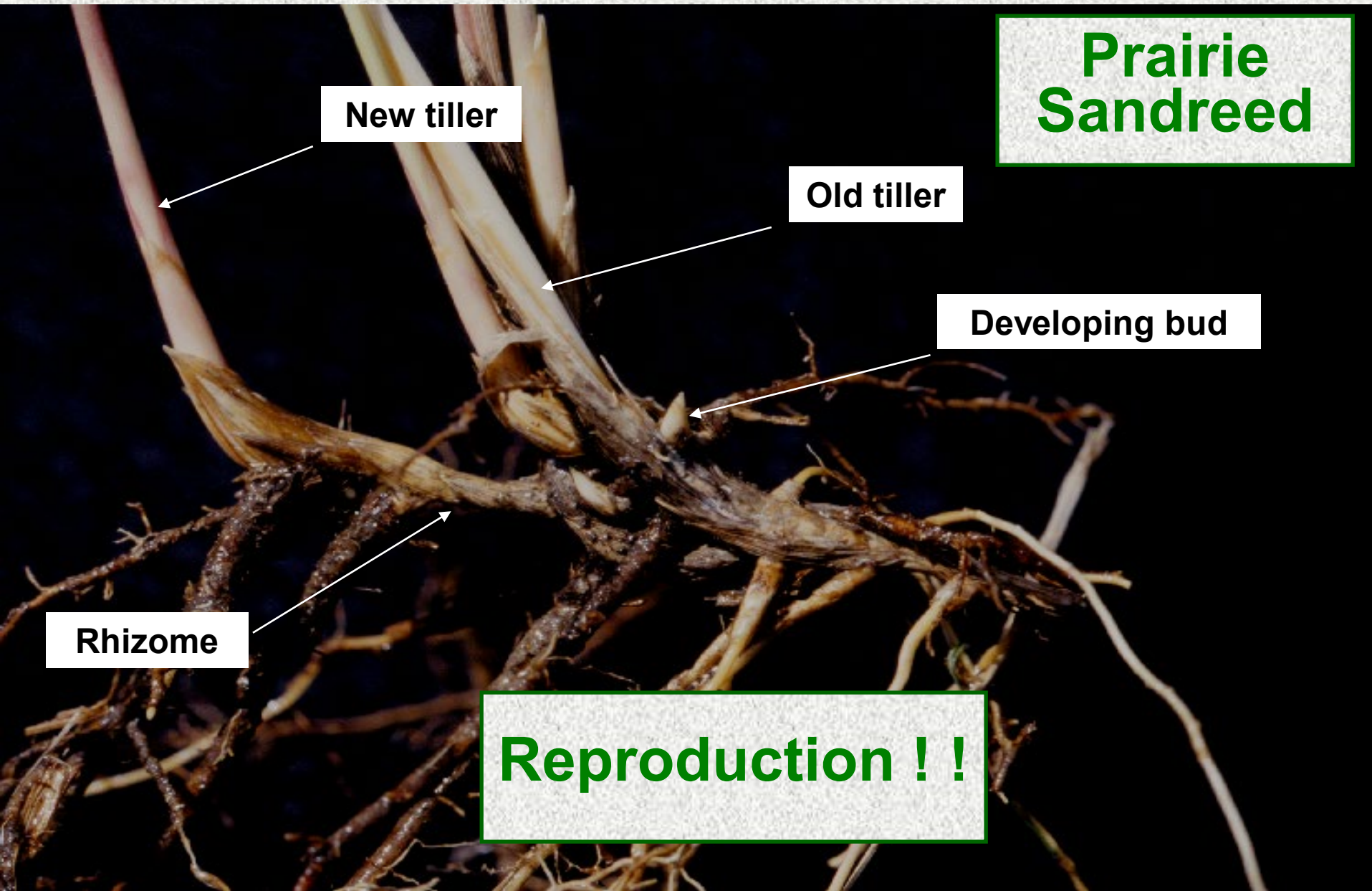
New tiller

Old tiller

Developing bud

Rhizome

Reproduction !!





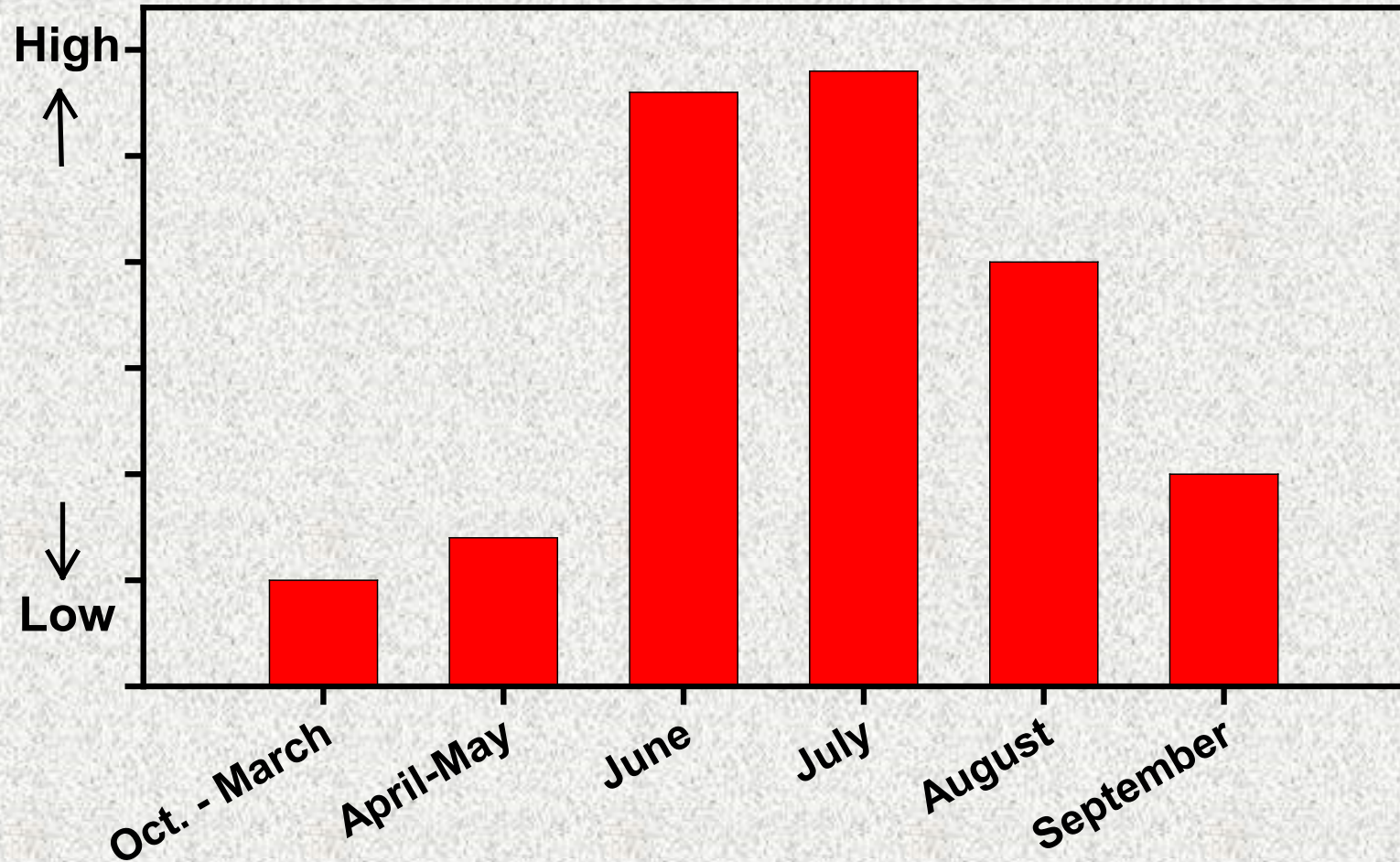
**Grazing of prairie sandreed  
in which month will result in  
the great reduction of root  
mass?**

**1. May**

 **2. July**

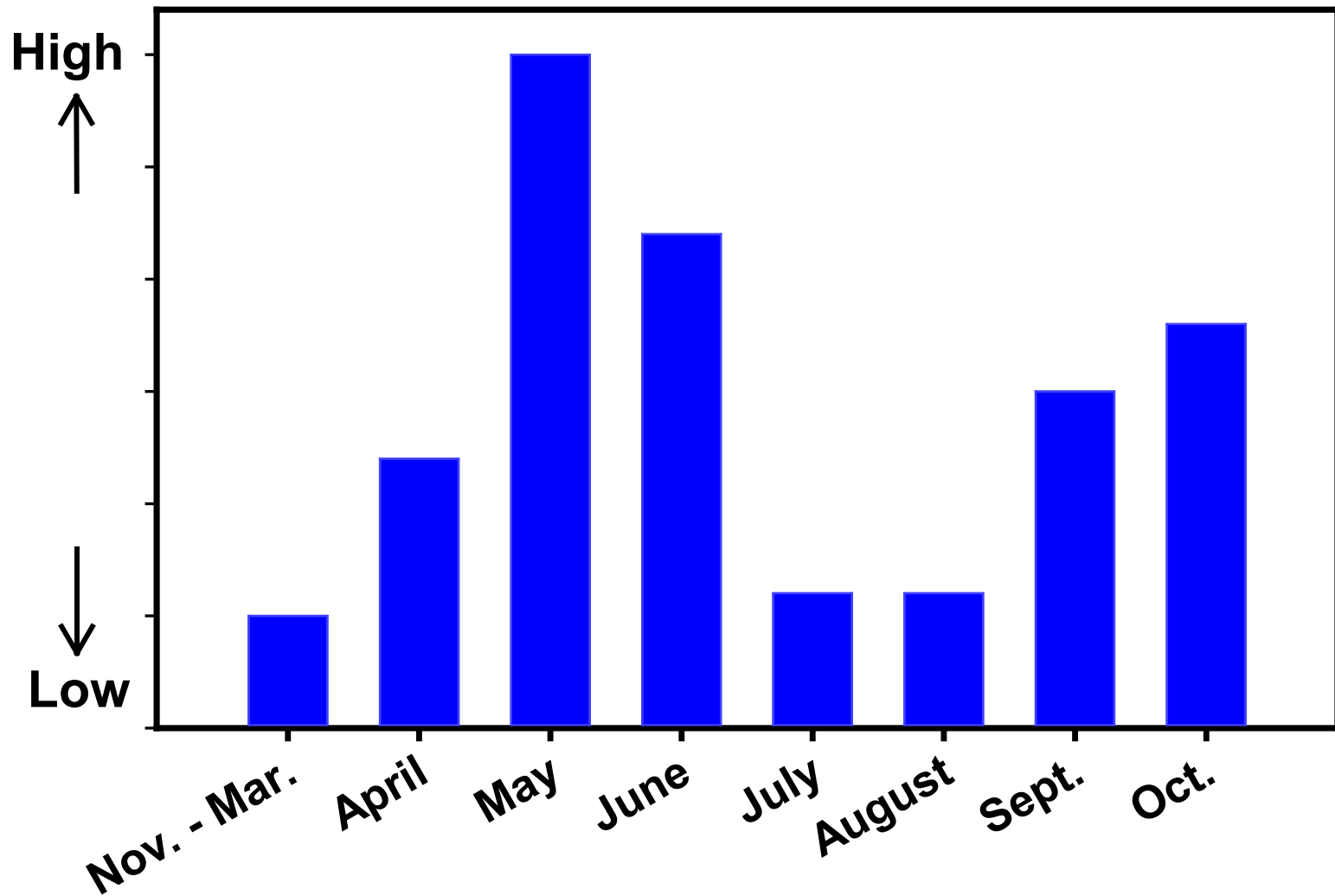
**3. October**

# Relative impact of grazing on vigor of warm-season grasses by season





# Relative impact of grazing on vigor of cool-season grasses by season



# Questions

