

Cattle Grazing Systems

Introduction



(Image A)

(Image B)

When cows graze on pastureland, it feeds the cows, but it can serve other purposes as well. Above, you can see two images of the same pasture. The image on the left (Image A) shows a degraded pasture ecosystem. The image on the right (Image B) is of the same ecosystem but was taken years after the farmer introduced rotational grazing.



a. Fill in the chart below with your observations:

I <u>notice</u>...	I <u>wonder</u>...

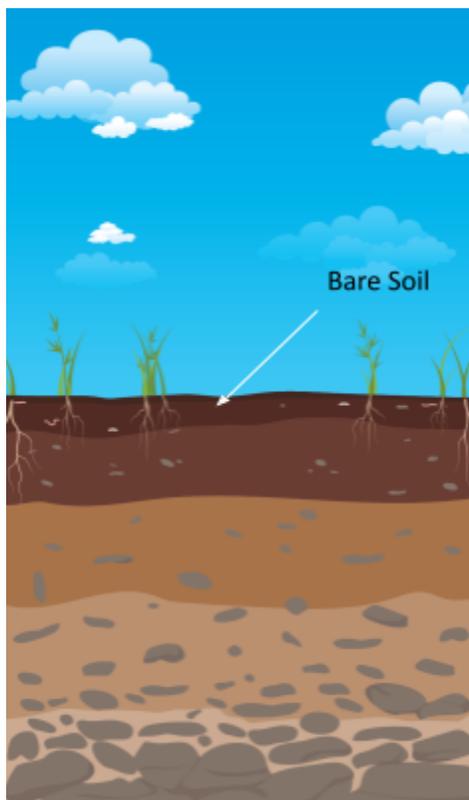




Prompt 1

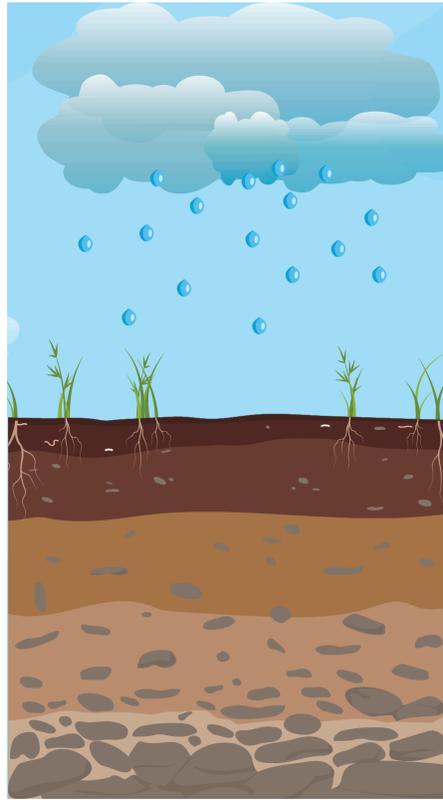
Overgrazing happens when farmers allow animals to graze an area, such as a pasture, to the point of damaging the vegetational cover and causing bare spots to form (such as in Image A above). Overgrazing can lead to negative ecosystem impacts such as water and wind erosion.

Water erosion happens in many forms, one being raindrop splash. The raindrops strike the bare soil, breaking the soil apart. The impact of the raindrops can be lessened by plant cover.



If a grassland is not properly managed, there is often bare soil that is exposed.





The grassland with bare soil gets rained on.





Over time, the grassland's soil becomes eroded, and plants cannot grow.





- a. When grassland is properly managed, there is more grass coverage, leaving less bare soil. Using what you know about water erosion and plant coverage, **fill in the flowchart like the one above, to show what would happen when there is plant coverage on the grassland.**



1.)





2.)



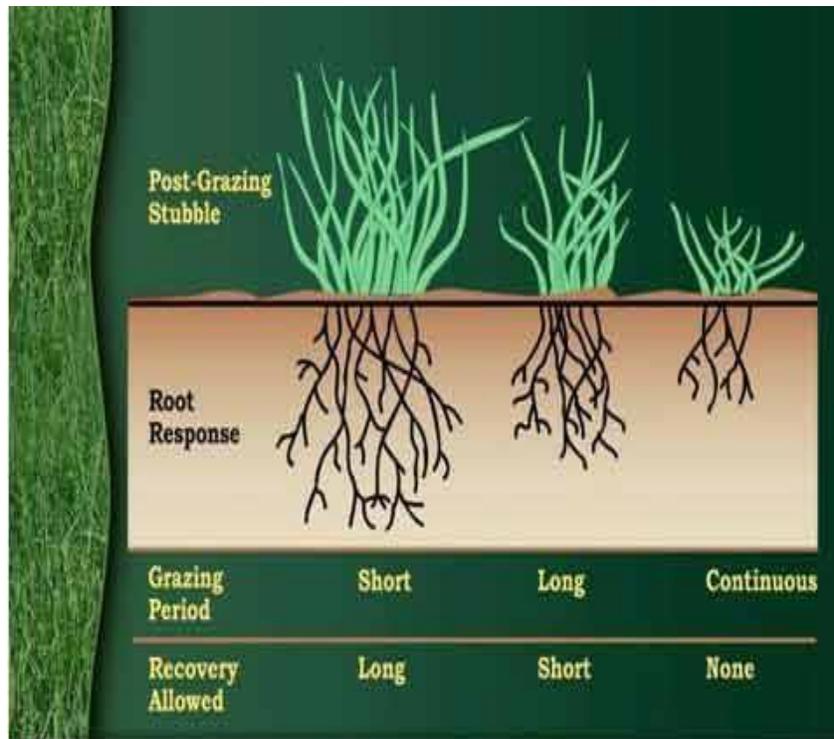
Will the grassland become eroded over time? Why or why not?

3.)



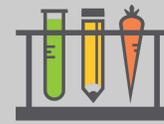
Prompt 2

After cattle graze on grass, the grass and its roots need time to recover. The chart below shows the difference between what grass and its roots look like when given different amounts of time before being grazed on again.



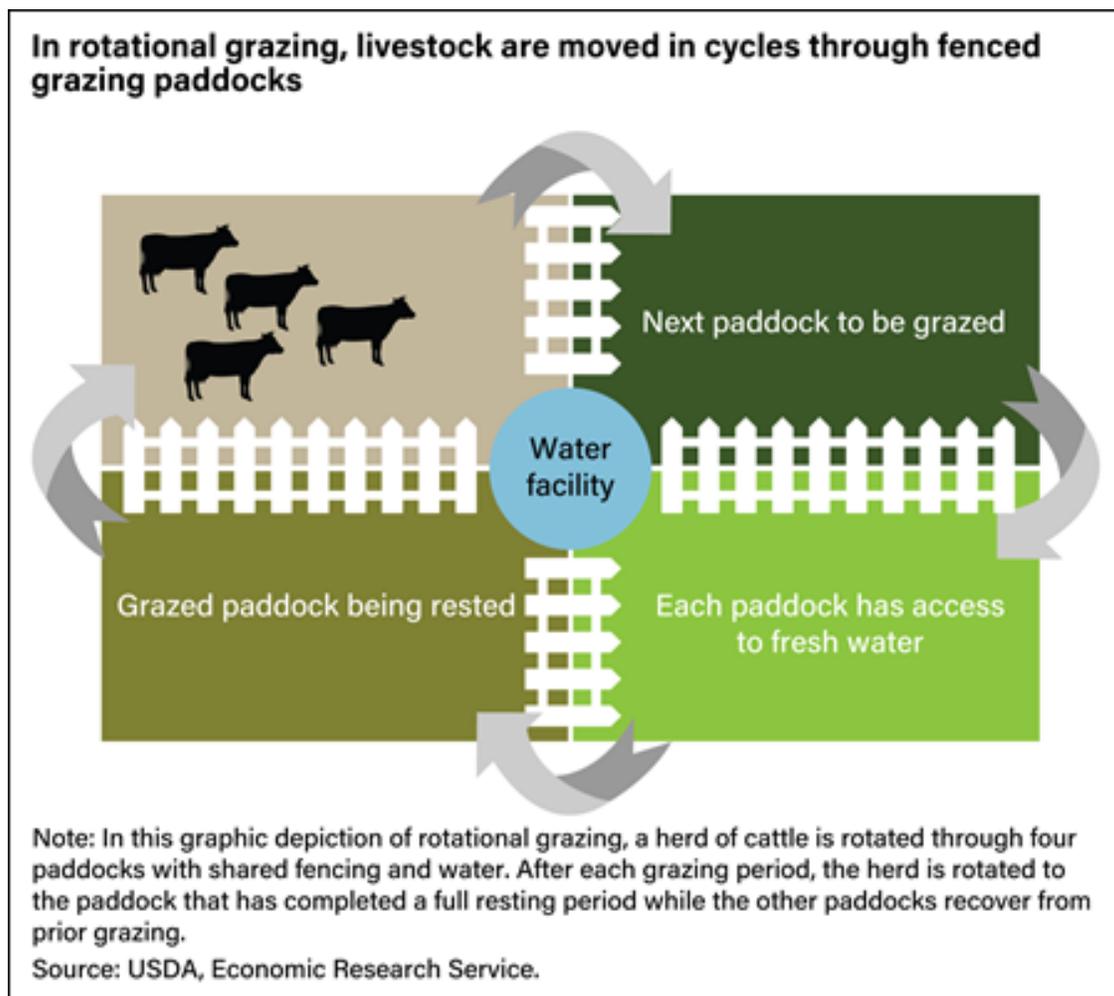
(Chart from <https://www.grant.k-state.edu/grazing-pasture-management/>)

- a. Explain what happens to the grass and its roots below ground when grazing is continuous and no recovery is allowed. Then, explain why you think this happens. You can use words, drawings, or combinations of both.



Prompt 3

Rotational grazing is a system that allows a pasture time to rest between grazing periods.



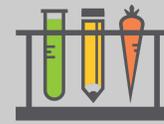
(Chart from <https://www.ers.usda.gov/amber-waves/2022/november/study-examines-how-and-where-u-s-cow-calf-operations-use-rotational-grazing/>)



a. List the components (parts) of the rotational grazing system.

b. How do the parts of the rotational grazing system work together to create a rest period for the pasture?





- c. Based on what we have discovered so far, make predictions about grass growth and raindrop splash erosion in a pasture that uses a rotational grazing system. Explain your answer.

Prompt 4

Farmers want healthy grass and soils in their pastures. However, they also need the pasture to feed their cows. Some farmers may worry that if they let the pasture rest between grazing periods, the pasture won't produce as much grass for their cows to eat.

The table below shows how much dry matter (DM) of grass is produced per acre of land per day in pastures using two different grazing systems. Dry matter is what remains after the water is removed from the grass. It is the standard way scientists measure how much forage grass is produced.

Table 1: Forage Grass Production

Grazing System	Grazing Period	Rest Period between Grazing	DM (lbs./acre/day)
Continuous	Continuous	No rest	37 lbs.
Rotational	1 week	3 weeks	64 lbs.

Data from Stewart et al, 2005. <https://doi.org/10.1094/FG-2005-1028-01-RS>





Which grazing system produces the most dry matter? Why do you think this happens?

Prompt 5

Watch the video about a farmer named Bishop who uses a map to track which paddock his cattle are moved to and plans how much grass they are grazing on.



[Video Link](#)





- a. Based on what we discovered about dry matter production, soil erosion, and grass and root growth, why would Bishop want to rotate his cattle through his pastures? What difference does the detailed plan make?

Like soil and grass health, stream health is also important to manage in a pasture ecosystem. An unhealthy stream has eroded banks, cow feces in the water, and sediment (tiny soil and rock particles) suspended in the water.





CATTLE GRAZING MANAGEMENT SYSTEMS

Continuous Grazing

Unlimited access to a single pasture



- ✓ Minimal overhead cost
- ✓ Less management

- ✗ Annual soil loss 15.5 times greater
- ✗ Streambank erosion is 150% greater
- ✗ Ground cover is only 50% = lots of bare soil

Simple Rotational Grazing

Moving cattle between a few pastures



- ✓ 50% less manure in streams
- ✓ 33% less sediment in streams
- ✓ Ground cover is 100% = little bare soil

- ✗ Higher fence and water system costs
- ✗ More management

b. Use information from the graphic above to explain how stream health improves with rotational grazing.

Look at the two images of the same pasture again. Remember, the second (Image B) was taken many years after the farmer started using a rotational grazing system instead of a continuous grazing system.



(Image A)

(Image B)



c. Using what you learned about grass/root growth, raindrop splash erosion, dry matter production, and stream health, explain how the rotational grazing system improved and protected the pasture ecosystem.

