Cattle Grazing Systems

Fifth Grade Earth and Life Science

Task Overview

In this task, students will obtain information from various media sources, such as infographics, videos, and data sets to explain how an agricultural management practice—the rotational grazing of cattle—can improve a pasture ecosystem. Students will explore the components of the rotational grazing system and how the system improves vegetative cover, grass, and root growth, dry matter production, soil erosion, and stream health (using three criteria for stream health—bank erodibility, sediment suspension, and the amount of fecal matter in the water). Students will use what they learned in the task to explain the original phenomena—before and after images showing a previously degraded pasture system that has been improved through the use of a rotational grazing system.

Next Generation Science Standards

Three-Dimensional Claim

In this task, students will obtain and combine information from various media sources to explain how agricultural practices, such as the type of grazing system used by a cattle producer, can improve and protect an ecosystem.

This task is intended to elicit student learning of the following **NGSS elements** for each of the three dimensions:

Disciplinary Core Ideas

Ecosystem Dynamics, Functioning and Resilience

- *ESS3.C-E1:* Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.

Science and Engineering Practices

Obtaining, Evaluating, and Communicating Information

- *INFO-E4:* Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.

Crosscutting Concepts

Systems and System Models

- *SYS-E2:* A system can be described in terms of its components and their interactions.

New York State P-12 Learning Standards

- *5-ESS3-1*: Obtain and combine information about ways individual communities use scientific ideas to protect Earth's resources and environment.

Helpful Prior Knowledge

Rotational Grazing is one of the grassland management strategies that students learn about in this transfer task. It is a process in which farmers plan how they will move or rotate their cattle to different pastures or pieces of land (ecosystems) to promote healthy grassland development. This management technique allows farmers to provide their cattle with nutritious forages, prevent overgrazing of any area, and cultivate healthy interactions between individual ecosystem components.

Students should have had opportunities to master the content within the New York Agriculture in the Classroom Next Generation Beef Toolkit - Ecosystems and Soil Health.

- As students participate in the first part of the toolkit experience, they will get a broad understanding of ecosystems and biodiversity while learning about humans' impact on the land.
- In the second half of the toolkit experience, students will learn how humans can regenerate ecosystems that might have been negatively impacted or increase the productivity of less productive land while engaging with a real-life agriculturalist.

Collaborations

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