

Instructional Scenario

Livestock Consultant



Course / Duty Area: Livestock Production Management / Using Plant Science in Livestock Production

Scenario:

You recently accepted a job as a livestock consultant for a local beef producer who is experiencing rising feed costs and declining animal performance. The producer currently relies heavily on purchased feed and has underutilized pasture and forage systems. You have been tasked with developing a forage-based feeding plan that improves livestock performance while reducing costs for the farmer.

Big Question: How can plant science be used to improve livestock health, performance, and profitability in Virginia livestock operations?

Focused Questions:

- How are forage types, seasonal growth patterns, and grazing strategies used to support livestock production goals?
- How do forage species and plant growth stages affect livestock nutrition and performance?
- What role does soil health play in forage quality and yield?
- How can pasture management practices reduce feed costs while maintaining herd health?
- How do livestock nutrient requirements change by age and production stage of cattle?
- How can sustainable plant-based feeding systems benefit both the environment and the producer?

Student Project: Students will work individually or in small teams to develop a forage and feeding management plan for a selected beef cattle herd on the small farm they are consulting with. It should include

- identification of appropriate forage crops for local conditions
- explanation of plant growth stages and nutritional value
- seasonal grazing and harvest plan
- connection between forage quality and livestock nutrient requirements
- basic cost comparison between forage-based feeding and purchased feed
- animal health considerations related to nutrition.

Student output may be presented as a written management plan, a digital presentation, or an oral presentation.

Project-Based Assessment

Criteria	Exemplary	Proficient	Developing
Plant Science Application	Correctly applies plant growth, soil, and forage principles	Mostly accurate application	Limited or inaccurate application
Livestock Nutrition Knowledge	Clearly explains livestock nutrient needs and forage value	Adequate explanation	Minimal explanation
Practical Livestock Management	Plan is realistic and applicable to Virginia farms	Some practical elements	Limited real-world relevance
Problem Solving	Demonstrates strong decision-making and reasoning	Adequate reasoning	Weak or unclear reasoning
Communication	Clear, organized, and professional	Mostly clear	Disorganized or incomplete

Teacher Resources

- [Pasture & Forage – Crops & Soils](#), Virginia Cooperative Extension
- [Grazing Management Conservation Practice Standard](#), USDA Natural Resources Conservation Service (NRCS)

Supplementary resources that may be used:

- Soil test reports
- Feed tags and forage analysis reports
- Seed catalogs
- Pasture maps or aerial images
- Forage growth charts

Suggested supplemental instructional strategies:

- Case study analysis
- Small-group problem solving
- Guest speaker (Extension agent and/or producer)
- Field walk or virtual pasture tour with hands-on forage identification

Scenario submitted by Christopher E. Jones, Greene County Technical Education Center, Greene County Public Schools