

Course	Agricultural Science II
Unit	Introduction to Grassland Management
Subunit	Grasslands and Grassland Plants
Lesson	An Introduction to Grasslands
Estimated Time	50 minutes
Student Outcome	

Identify different types of grasslands and explain factors that create them.

Learning Objectives

1. Identify a grassland.
2. Describe forages.
3. Describe natural factors that affect the creation of grasslands.
4. Describe native grasslands.
5. Identify a prairie.
6. Identify a glade.
7. Identify a savanna.
8. Describe managed grasslands.
9. Describe grassland management.
10. Describe grassland conservation.

Grade Level Expectations

SC/ME/1/B/09-11/b	SC/EC/1/A/09-11/a	SC/EC/1/A/09-11/b
SC/EC/1/D/09-11/a	SC/EC/1/D/09-11/b	SC/EC/3/C/09-11/d
SC/ST/1/C/09-11/a	SC/ST/3/B/09-11/a	SC/ST/3/B/09-11/b
SC/ST/3/B/09-11/c		

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. PowerPoint Slide
☐ PPT 1 – A Missouri Glade
2. Activity Sheet
☐ AS 1 – Word Search
3. *Introduction to Grassland Management* (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1997.
4. *Introduction to Grassland Management Curriculum Enhancement*, “Unit I – Grasslands and Grassland Plants.” University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplies & Equipment

- ☐ Slides to visually represent grasslands, if available
- ☐ Pictures of a prairie, if available

Supplemental Information

1. Internet Sites

- ❑ Grassland Types. Grassland Habitat, Hamilton Naturalists' Club, Ontario, Canada. Accessed February 4, 2008, from http://www.hamiltonnature.org/habitats/grasslands/grass_types.htm.
- ❑ National Grasslands. USDA Forest Service. Accessed February 4, 2008, from <http://www.fs.fed.us/grasslands/>.

Interest Approach

Ask students what they think a grassland is. List their answers and discuss them. If possible, use slides to visually represent grasslands. Ask the following questions: Is an area a grassland if food for livestock is not raised on it? [Yes.] Is prairie grassland? [Yes.] Is a cornfield grassland? [Ecologically yes, agriculturally no.] What about your front yard? [Yes.]


Have students observe a lawn and explain what actions must take place to establish and maintain the area in grass. Have them answer the following questions: What would happen if weed control stopped? What would happen if mowing stopped? Have students visit another type of grassland convenient for them (pasture, prairie, glade) and evaluate it in the same way.


Communicate the Learning Objectives


1. Identify a grassland.
2. Describe forages.
3. Describe natural factors that affect the creation of grasslands.
4. Describe native grasslands.
5. Identify a prairie.
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Instructor Directions	Content Outline
Objective 1 <i>Ask students for a definition of grassland. Discuss the different meanings of the word.</i>	Identify a grassland. <ol style="list-style-type: none">1. Ecologically, a plant community dominated by grasses, whether they exist naturally or because of management practices2. Agriculturally, an area managed to grow grass, legumes, or other pasture or range plants used mostly for the production of forage
Objective 2 <i>Ask students to name some of the plants they consider to be forages. Discuss the definition of forages.</i>	Describe forages. Forages are primarily grasses and legumes grown for their soft, vegetative parts, which are used as feed for livestock

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<p>Objective 3</p> <p><i>Ask students to list natural factors that affect grasslands. Discuss the different factors.</i></p>	<p>Describe natural factors that affect the creation of grasslands.</p> <ol style="list-style-type: none"> 1. Climate <ol style="list-style-type: none"> a. Grasslands usually dominate in areas averaging 10 to 30 inches of rainfall. b. Most of Missouri receives 35 inches of precipitation or more each year, which places the state at the transition point between grassland and forest. 2. Soil <ol style="list-style-type: none"> a. Some soils (such as shallow or coarsely textured soils, hardpans, and soils with high water tables) discourage tree growth and favor grasslands. 3. Plants <ol style="list-style-type: none"> a. Many grassland plants have adapted to their environment by becoming dormant when conditions are harsh and producing new growth when conditions improve. b. This adaptation allows them to survive damage from fire, grazing/browsing, drought, and high winds, all of which can kill or limit the growth of trees and shrubs. 4. Grazing <ol style="list-style-type: none"> a. Grazing is natural to grassland communities. b. Unlike trees and shrubs, which are more severely damaged by grazing and browsing, grassland plants have adapted to grazing. 5. Fire <ol style="list-style-type: none"> a. Grassland plants tolerate fire better than trees and shrubs. b. Where fires occur often enough to limit forest, grasslands dominate.
<p>Objective 4</p> <p><i>Ask students to explain what native grasslands are. Discuss the changes European settlers and modern agriculture made to the ecology and landscape of Missouri.</i></p>	<p>Describe native grasslands.</p> <ol style="list-style-type: none"> 1. Native grasslands are those that existed in America before the arrival of European settlers. 2. The trend toward conservation farming has led to new interest in native grasslands and their plants. 3. Most of Missouri's native grasslands are prairies, glades, or savannas.

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<p>Objective 5</p> <p><i>Ask students to describe what a prairie is. If possible, show them pictures of a prairie.</i></p>	<p>Identify a prairie.</p> <ol style="list-style-type: none"> 1. Prairies are large, continuous native grasslands in which trees and shrubs are nearly absent. 2. While grasses dominate, a rich diversity of native grasses, legumes, and forbs inhabit Missouri's remaining prairies. 3. Different kinds of prairies develop on different sites. <ol style="list-style-type: none"> a. Dry <ul style="list-style-type: none"> - Dominated by shorter grasses like little bluestem and sideoats grama - Mostly converted to pasture b. Wet <ul style="list-style-type: none"> - Dominated by taller grasses like big bluestem and Indiangrass, sometimes reaching 6 to 8 feet in height - Mostly converted to cropland
<p>Objective 6</p> <p><i>Ask the following question: "While admiring a blossoming yucca, you fall from your horse, land seat first on a cactus, get stung by a scorpion, bitten by a tarantula, and struck by a rattlesnake. Aside from a world of hurt, where are you?" Point out that the answer could be a Missouri glade. Refer to PPt 1.</i></p> <p> PPt 1 – A Missouri Glade</p>	<p>Identify a glade.</p> <ol style="list-style-type: none"> 1. Small, isolated native grasslands occurring on hilltops and southwest-facing slopes 2. Found where rocky outcrops, exposure to sunlight, and thin, dry soils create harsh desert-like conditions during the summer 3. Dominated by prairie grasses and forbs 4. Also have plants and animals from western prairies and deserts like yuccas, cacti, tarantulas, and scorpions
<p>Objective 7</p> <p><i>Ask students to describe a savanna. When woodlands and grasslands meet, the sudden presence of trees may look like a distinct change, but actually a more gradual transition is taking place. Grasslands with widely spaced trees and woodlands with a</i></p>	<p>Identify a savanna.</p> <ol style="list-style-type: none"> 1. Specialized community that is intermediate between grassland and forest with widely spaced trees, a conspicuous absence of smaller trees and shrubs, and grasses as the dominant ground cover 2. Can be used for wood, wildlife habitat, and forages

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<p><i>healthy stand of grass beneath the trees were common in presettlement Missouri.</i></p>	
<p>Objective 8</p> <p><i>Point out that few native grasslands with their original plant communities are left in Missouri, yet grasslands can be easily found in every part of the state. Ask students about the origin of these grasslands.</i></p>	<p>Describe managed grasslands.</p> <ol style="list-style-type: none"> 1. Managed grasslands are areas managed for forage, pasture, or grassland habitat. 2. Over 95% of Missouri's grasslands are privately owned. 3. Most managed grasslands are used for forage production; pasture is the most common type of grassland in Missouri.
<p>Objective 9</p> <p><i>Discuss how grasslands are used today. Have students list factors involved in establishing and maintaining a grassland.</i></p>	<p>Describe grassland management.</p> <ol style="list-style-type: none"> 1. Grassland management is the use and care of grasslands. 2. It involves managing the plants, animals, equipment, and practices needed for the successful use of grasslands.
<p>Objective 10</p> <p><i>Ask the class whether grasslands are a natural resource. Have students list other natural resources found on grasslands (soil, water, wildlife, plants). Discuss why conservation is important. Have students complete AS 1.</i></p> <p> AS 1 – Word Search</p>	<p>Describe grassland conservation.</p> <p>Grassland conservation is the wise use of grasslands and other natural resources found on them to ensure their long-term productivity and sustainability.</p>

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<p>Application</p> <p> AS 1 – Word Search</p>	<p>Answers to AS 1</p> <p> HH A B E C L I N T D N L L K B C R H A G J E P F I R A W M A N T Q G R S A V C S S S E Z O A R K R T M O B O E A C F A B D V N O R P L L O U A G G N D I N A O O P T I R K S F O R I K S O N I B R Y S V A P M E L T S N W I L B M B L E M O X T I A S I T Y M T E G L A D E I S O N R S J D Z S Q G D N T A C L I V S A A G R A C R F S L D I N T B Y P H B O A S O S T O N B L N I M A L S O S N A W M L O T E B M M L I V B E O A T I N A N I Z Y H A Z C N C O R H A R S G P L A K G U M O W I N G A N P E A R E E K D O E G N M E O R S P E N K W R L A N B E B G H R B G L S A N A N V R C K A O H I C D V M S E R O M I L G N A T T I Y Z A O B O H M Z C L O R I T I D I O N E L A S R H O P L I V E S T O C K I A M P G A S S I N R X N I D O R P B R N A T V E S S G U N P R A I R I E V P C O T T F T O N R B S J D Q E C H R L G L A M O R K D E A I T Z Y S R D A O O U T A T B L I T E Y A N T A O I N A T E O B O R T R S A K D X L A S I D Y G P H A I L B T P A Y R V A F I P R U D V E U L K O M A B U R I T M C A T V B P U B T I P O S S L E W D C K N A L X M O J I H Q O R N D O T Q W R X A A C E V E G E T A T I V E N K V R B E A T J C D M O E U N S V A O D L O S I E L I S H S E L S H W I L D L I F E W C A T F B Y R D T I V T L Q P D I N Y B S P N H W R C T G L A D U S J A D O M A I N U Z M O V A F J U G E S I R A P B H S Y R L I Q T R O K T V J C C Z L Q E V G R A S S E S S O L D E T E A W B K N O T Y X </p> <p>Other activities</p> <ol style="list-style-type: none"> 1. Visit a prairie, glade, or savanna to distinguish between grasslands and other vegetation types. Emphasize the differences between native grasslands and converted grasslands. 2. Show range maps for the Eastern collared lizard, brush mouse, roadrunner, and prairie ringneck snake as examples of western desert and prairie species that live in glades in Missouri. 3. Have students visit a pasture and write a description of it, mentioning the amount of ground cover, the density of the plants, the amount of bare soil, signs of erosion, and the height and quality of the forage. Read descriptions of native grasslands. Compare

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	<p>these descriptions and ask students which land they would prefer to own. What do they think can be done to improve forage production on the pasture they observed?</p>
Closure/Summary	<p>In agriculture, a grassland is an area managed to grow grass, legumes, or other pasture or range plants for forage production. Forages are primarily grasses and legumes used as feed for livestock. Several basic environmental factors – climate, soil, plants, grazing, and fire – influence the growth of grasslands. Native grasslands, including prairies, glades, and savannas, once covered much of the state, but most have been converted to other uses. Most of Missouri’s grasslands now consist of pastures of nonnative plants, although native grasslands and native plants are showing new promise in livestock operations. The key to success in grassland farming is proper management, which focuses on sustaining the productivity of forage plants.</p>
Evaluation: Quiz	<p>Answers:</p> <ol style="list-style-type: none"> 1. c 2. b 3. d 4. a 5. d 6. a 7. Managed grasslands are areas managed for forage, pasture, or grassland habitat. 8. Grassland management involves managing the plants, animals, equipment, and practices needed for the successful use of grasslands. 9. Forages are primarily grasses and legumes grown for their soft vegetative parts, which are used as feed for livestock. 10. Climate, soil, plants, grazing, fire 11. Agriculturally, a grassland is an area managed to grow grass, legumes, or other pasture or range plants used mostly for the production of forage.