

Ag in the Playing Fields

Objective

Students will identify sports items made from agricultural products. Students will research their favorite sport. Students will use a variety of sports equipment to perform mathematical operations. Students will learn about the life cycle of plants.

Background

What would sports be without agriculture? Footballs, soccer balls, basketballs, volleyballs and baseballs all are made with leather from the hide of cattle. The best shoes, protective gloves and mitts are made from leather, too. Ball caps are made with wool from sheep, and uniforms are sometimes wool or cotton. Nets for volleyball, basketball, tennis, badminton and soccer are made from nylon blended with cotton, one of Oklahoma's top crops. Socks and shoelaces are also made from cotton. Baseball bats are made from the wood of ash trees, and the flooring for basketball courts is from hardwood maple trees.

Sports would not be the same without all the great foods we eat while we're watching—hot dogs, hamburgers, pretzels, peanuts, sunflower seeds and Cracker Jacks. Even pop and chewing gum depend on agriculture. Syrup from corn is what makes pop and gum taste sweet.

Tickets and programs are printed on paper made from trees and with ink made from refined soy oil from soybeans. Gelatin from the bones of cattle helps transfer ink to copy paper.

Even the best athletes get injured sometimes, and agriculture helps patch them up. Bandages are made from corn dextrose, and cattle gelatin is used in adhesive and binding agents. Cattle gelatin is also used as a coating for vitamin capsules. Cattle fat and fatty acids are used in various medicines, creams and lotion. Corn-based syrup and dextrose are used in various injections, pills and tablets.

Possibly the most important agricultural commodity used in sports is turfgrass—the grass on which the game is played. The condition of the grass on a sports field can make all the difference. Athletic field grasses must have dense, thick sod that can withstand impact and grow back quickly when it is damaged. This is especially true in soccer. When the field is in bad shape, the ball can't move easily across the field, the players have trouble passing and poorly kicked balls are constantly flying over the touch lines. Players are more likely to get hurt on bad fields.

One of the best grasses for athletic fields in the southern US was developed at Oklahoma State University. Riviera bermudagrass is a tough grass that grows back quickly when it is damaged. It is also the only bermudagrass to grow from seed. Grass that grows from seed works better for playing fields because it can be planted when and where it is needed.

Oklahoma Academic Standards

GRADE 3

Speaking and Listening: R.1,2,3;
W.1,2. Critical Reading and
Writing: W.1,2. Research:
R.1,2,3,4; W.1,2,3
Number & Operations: 2.2,7.
Geometry: 1.1,2. Measurement:
2.1,2,3,4,8
Physical Science: 2-2. Life
Science: 1-1; 4-3

GRADE 4

Speaking and Listening: R.1,2,3;
W.1,2. Critical Reading and
Writing: W.1,2. Research:
R.1,2,3; W.1,2,3
Number & Operations: 1.1,2,3,5.
Geometry: 1.2,3. Measurement:
2.5
Life Science: 1-1

GRADE 5

Speaking and Listening: R.1,2,3;
W.1,2. Critical Reading and
Writing: W.1,2. Research:
R.1,2,3; W.1,2,3,4
Number & Operations: 1.4.
Geometry: 1.3
Life Science: 1-1; 2-2

Vocabulary

adhesive—a substance (as glue or cement) that tends to stick.

agriculture—the science, art, and business of cultivating soil, producing crops, and raising livestock; farming.

bermudagrass—a trailing grass that is native to Europe and is used for lawns and pasture especially in the southern US

commodity—a product of agriculture or mining

cotton—a soft usually white fluffy material made of the hairs around the seeds of a cotton plant and spun into yarn

dextrose—the naturally occurring form of glucose found in plants, fruits, and blood

fatty acid—any of numerous acids that contain only carbon, hydrogen, and oxygen and occur naturally in fats and various oils

flannel—a soft cloth made of wool or cotton

gelatin—gummy or sticky protein obtained by boiling animal tissues.

leather—animal skin prepared for use

sod—the grass-covered and herb-covered surface of the ground.

soybean—a hairy annual Asian plant of the legume family widely grown for its edible seeds rich in oil and proteins

syrup—the juice of a fruit or plant with some of the water removed

turfgrass—the upper layer of soil bound by grass and plant roots into a thick mat

wool—the heavy soft wavy or curly hair of various mammals and especially the sheep

Materials

- old or cheap recreational balls for students to take apart
- aluminum pans, square and rectangle
- potting medium
- ryegrass seed
- toothpicks and other materials for decorating miniature sports fields
- flour
- scissors

Procedures

1. Read and discuss background and vocabulary.
2. Provide an assortment of old or cheap recreational balls for students to take apart in groups.
 - Students will hypothesize what materials are in each and then record what they find. What agricultural products do they find in each ball? (Note: materials will vary, but some products will include wool yarn, cotton string, cork, wood, and rubber.)
 - Students will write descriptions of the materials they find in the balls.
3. Students will work in groups to make up agriculture-related names for imaginary sports teams.
 - Students will explain the names they have chosen to the class and develop logos, design uniforms, create mascots, produce posters and brochures, etc.
 - The class will vote for their favorites.
4. Students will write a story about a day in the ballpark, tracking all the agricultural products used.
5. Students will each conduct one of the following research projects related to sports:
 - Research the origins of your favorite sports team and design programs that include the information you found.
 - Research the origins of five major sports and place them correctly on a timeline.
 - Research to find which sport uses the largest number of agricultural products and which uses the least. Present your research to the class.
 - In other countries around the world, “football” is what we know as soccer. Research to find the origins of both sports.
 - Research the influence of Native American games on games we commonly play today.
 - Choose a sport and research some aspect of the uniform or equipment (baseball hat, football, etc.), then draw timelines showing the evolution of the item.
 - Research materials used originally in uniforms and compare them with materials used now. Discuss reasons for the

changes.

6. A soccer field is 100 yards long and 50 yards wide. A football playing field is 100 yards long (not including the goal posts) and $53 \frac{1}{3}$ yards wide.
 - Students will find the area of each.
 - If one pound of grass seed per thousand square feet is needed to seed the fields, how many pounds would be needed for each field?
7. Students will devise a strategy to measure a football.
 - The geometrical name for a football is “prolate spheroid.” This means its axis of symmetry is longer than its other axes. A peanut M&M candy is a prolate spheroid. A plain M&M candy is an oblate spheroid.
 - Students will find other examples of these two kinds of spheroids.
8. Students will draw accurate replicas to scale of fields for their favorite sports and measure to mark the lines correctly.
9. Students will grow their own miniature ballfield, as follows.
 - Fill an aluminum pan (rectangle for football or soccer, square for baseball) in which you have poked holes with potting medium.
 - Moisten the potting medium, and sprinkle rye grass over it. Gently press the rye grass into the potting medium to cover it.
 - Students will decorate with toothpicks or other materials to make the pans look like their favorite kind of playing field and use flour to mark the lines.
 - Students will keep the “field” watered, and use scissors to keep it “mowed.” When the grass has filled in, conduct experiments with ping pong balls or marbles to find the length of grass at which the balls move best.

Extra Reading

- Berman, Len and Kent Gamble, *And Nobody Got Hurt!: The World's Weirdest, Wackiest True Sports Stories*, Little, Brown, 2005.
- Diehl, David, *Sports A to Z*, Lark, 2007.
- Hammond, Tim, *Sports*, DK Eyewitness, 2005.
- Lupica, Mike, *The Big Field*, Puffin, 2009.
- Nelson, Kadir, *We are the Ship: The Story of Negro League Baseball*, Jump at the Sun, 2008.