Deeply Rooted Lesson Plan – Middle School

THE BELIEVE IT OR NOT OF AGRICULTURE

Weird Things Made from Crops and Livestock!

Recommended Grade Level: 7th - 9th grades
Duration: 2-3 class periods

Agricultural Background

Common agriculture practices are part of daily life in much of the country. Missouri is certainly no exception to this, as agriculture encompasses a large amount of land and provides numerous jobs to Missouri's citizens. However, not all agriculture practices produce what we consider common – such as food and clothing. This lesson plan aims to increase the student's understanding of how agriculture impacts daily life through hands-on experiences, utilizing trunk contents and scientific classroom research.

Objectives

- Students in Missouri schools will acquire the knowledge and skills to gather, analyze, observe, record, and apply research information and ideas.
- Students will use tools of observation and science inquiry to identify little known agriculture-based products.
- Students will research a specific unusual agriculture use, why it's used, its possible benefits, and its rate of occurrence.
- Students will apply factual research to calculate amounts and rate of occurrence.
- Students will be able to spell and define vocabulary words.

This lesson meets the criteria for more than 12 Grade-and Course-Level Expectations for Agriculture and Math Education for grades 7-9.

Materials

- Research materials about general agriculture production (trunk content)
- Identification guides (trunk content)
- Acrylic viewers (trunk content)
- Paper and pencil
- Internet access
- Included lesson plan product list and information sheet

Lesson Preparation

- Organize students into groups based on class size.
- Make copies of the product sheet and information sheet as needed.
- Go over basic Missouri agriculture practices and information.
- Give students time to familiarize themselves with trunk content of instructor's choosing.

- Go over unusual agriculture product and information sheets as a class, and assign an unusual agriculture product to each group.
- Present students with the lesson vocabulary words and definitions listed at the end of the plan.

Challenge One:

a. Have groups research their assigned unusual agriculture practice/product.
b. Students should make a chart showing the percent of their assigned unusual agriculture product compared to "common" agriculture products from the same source (e.g. one unusual agriculture product for cattle is tire manufacturing, versus common products such as food, clothing, leather goods.)
c. Students will then answer the following questions:
   - What is the process for turning a common agricultural practice into this unusual product?
   - Is this agriculture product sustainable?
   - Are there known substitutes for this unusual agriculture product and, if so, are they feasible in today's agriculture market?
   - How does this product change the way they think about agriculture?
d. Students will each write up a portion of a group summary on their unusual agricultural product to present orally to the class.

Analysis:

- Once the challenge is completed, the groups will compile their research data together and discuss what they have learned as a class.
- How are all of these unusual agricultural products different? How are they similar?
- Do the students think the unusual agricultural products researched in this lesson plan should be considered beneficial or detrimental to the ecosystem, and necessary or unnecessary? Ask them to explain their answer.

Challenge Two:

a. Students will calculate the percentage of unusual agricultural product made from their assigned harvested crop or livestock.
b. Students will calculate the total number of square miles of land, gallons of water, and/or pounds of nourishment that is required to produce their unusual product for one year.
c. Make a bar graph showing each groups calculations:
   - Which unusual product consumes the most resources? Which one uses the least?
   - Which unusual product is utilized the most in today's society?

Analysis:

- The students will utilize the calculation graph and draw conclusions from it.
- How do they think producing the unusual products have benefitted the people of Missouri? The land, crops, or livestock?
- Are they surprised by the determined calculations?

Lesson Plan Assessment:

- Did the students enjoy studying about these agricultural processes and the resulting product?
- Do the students feel comfortable making calculations?
- Do students have an understanding of how these products impact their daily lives?
- Were the students engaged during the two challenges and have questions during the oral presentations?
- Can students utilize the vocabulary?

VOCABULARY:

Acre – A parcel of land, containing 4,840 square yards or 43,560 square feet.

Agriculture – The utilization of biological processes on farms to produce food and other products useful and necessary to man.

Bushel –A unit of dry measure (1 cubic foot) for grain, fruit, etc., equivalent to 8 gallons of liquid. Weight varies with the density/bulk of the commodity. Example: Oats weigh 32 lbs. per bu.; barley, 46 lbs. per bu.; and corn, 56 lbs. per bu.

Cash Crop – Any crop that is sold off the farm to yield ready cash.

Confinement – Livestock kept in "dry-lot" for maximum year-round production. Facilities may be partial or complete solid floored and enclosed/covered.

Cooperative – An organization formed for the purpose of production and marketing of goods or products owned collectively by members who share in the benefits. Most common examples in agriculture are canneries and creameries.

Ethanol – a colorless volatile flammable liquid made from corn that is used as a solvent and in fuel.

Hydroponics – Growing of plants in water containing the essential growth elements.

Land Classification – The classification of units of land for the purpose of grouping soil of similar characteristics, in some cases showing their relative suitability for some specific use.

Livestock – Any domestic animal produced or kept primarily for farm, ranch, or market purposes, including beef and dairy cattle, hogs, sheep, goats, and horses.

Manufacturing – Something made from raw materials by hand or by machinery.

Pest – Any organism injuring plants or plant products.

Production – The making of goods available for use.

Sustainable – Of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged.

Silage – Prepared by chopping green forage (grass, legumes, field corn, etc.) into an airtight chamber. Contains about 65 percent moisture; 3 lbs. of silage is equal to 1 lb. of hay nutritionally.

Slaughterhouse – A place where animals marketed for meat are killed.