



AGRICULTURE AND NORTH AMERICA

Grade 7 Geography of World Regions

South Carolina Social Studies College- and Career-Ready Standards

ACTIVITY Explore global, national, and state agricultural patterns and land use in support of food production.

RESOURCES Internet

INDICATORS 7.5.1.PR Identify North American physical systems and human characteristics of place.
7.5.2.ER Identify climate and vegetation regions and the spatial distributions and patterns of natural resources, including the impact of their location on human activities.

SKILLS Mapping; Models and Representations; Gather Evidence and Communicate Findings; Distribution and Patterns

OUTCOMES Students learn that agriculture can take a heavy environmental toll and that improvements in agriculture are necessary to find the growing world population.

TASK 1

- ? As the population on Earth increases, what resources will have increased demand? *[answers will vary but will include energy resources, building materials, and, at the most basic level, food]*
- ? What would happen if the world's population grew without an increase in food production? *[malnutrition and hunger would increase]*
- ? How could food production be increased? *[an increase in agricultural land or an increase of productivity of existing agricultural land]*

TASK 2

- Read the map at <https://hub.arcgis.com/datasets/db84bd8f6c3c47fa8e0886f0485252e3> using the legend to identify regions with high or low crop yields.
- ? Where are current crop yields highest? *[Great Plains, Europe, Indonesia, India, China]*
- ? Where are current crop yields lowest? *[American Southwest, Africa, much of Latin America, and much of the northern hemisphere]*
- Click to the next tab "Closing Yield Gaps" at <https://www.arcgis.com/home/item.html?id=aee5f900e1d64eb4bc2affaf44180e7c>
Encourage students to toggle between map views with the slider. Here, students can toggle between current yields and the potential increase in yield.
- ? How can agricultural yields be improved? *[fertilizers, irrigation, and genetic engineering]*
- ? Which regions have the greatest potential for increased productivity? *[Mexico, much of Africa, parts of Central Asia, and many parts of South America]*
- Click to the next tab "Increasing water use efficiency" at <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=9107c29615fa4e45b088c09cb82e58ad>

- ? Why does the amount of irrigation vary so much between different world regions? *[differing crops, differing soil types, differing levels of water availability, differing irrigation infrastructures]*
- Click to the next tab “Changing crop use & diet”.
- ? How does the use of cropland in the Global North differ than the Global South? *[In the Global South, more cropland is used for food than in the Global North where more cropland is used for animal feed]*
- ? The text states “Shifting more crop production toward food use could potentially add about 50% more calories to the global food supply.” When it says “shifting more crop production toward food use” what does that mean in the practical sense of day-to-day diet? *[less crops would be used for animal feed meaning less meat would be produced requiring diets to have less meat overall]*

TASK 3

- Go to the Story Map at <https://storymaps.esri.com/stories/2017/cost-of-beef/>
- Scroll through “The Facts” section of the Story Map.
- ? What are some of the downsides to beef? *[answers will vary but could include: cattle consume many more calories than they produce, greenhouse gas emissions from cattle are much higher than pork or poultry, about 30% of the Earth’s land surface is used for cattle production]*
- Scroll through the “Atlas of Beef” section of the Story Map.
- ? How is the agricultural landscape of the American Midwest similar to and different from the agricultural landscapes of India, China, Argentina, and Brazil? *[Answers will vary but should include similarities and differences in the amount of cropland used for cattle feed, farm sizes, and local consumption vs export]*
- ? Where are the three largest producers of beef? *[the United States, Brazil, and the European Union]*
- ? What percentage of the total world production do they produce? *[19% + 15% + 13% = 47%]*
- ? What does “per capita” mean? *[average per person]*
- ? The United States ranks fourth for per capita consumption of beef. What three places have a higher per capita beef consumption? *[Uruguay, Argentina, Hong Kong]*
- ? How can the total amount of beef consumed in the United States be greater than Uruguay, Argentina, and Hong Kong despite each of them having a higher per capita beef consumption? *[the United States has a much larger population]*
- Scroll through the “Life Cycle” section of the Story Map.
- ? What environmental and health risks result from the lifecycle of cattle in the United States? *[airborne and waterborne pollutants and the potential for antibiotic resistance]*
- Scroll through the “What can you do?” section of the Story Map.
- ? What can you do? *[answers will vary]*

TASK 4

- Go to the USDA Economic Research Service Fact Sheet for South Carolina at https://data.ers.usda.gov/reports.aspx?StateFIPS=45&StateName=South%20Carolina&ID=17854#Pf7d94e5a8d8641c1b8d8277585638fa0_2_527iT18R0x0
- Click on “Top Commodities, Exports, and Counties”
- ? What agricultural commodity in South Carolina had the largest cash receipts? *[broilers]*

- Go to this map of South Carolina Permitted Agricultural Facilities
<https://scdhec.gov/sites/default/files/docs/Environment/docs/allag.pdf>
- ? Describe and explain spatial patterns you see on the map. *[answers will vary, but could include a clustering of poultry production primarily in the Midlands (with a secondary clustering in the northwest corner of the state) clustering of swine production near the SC/NC border and a cluster of turkey production in Lancaster, Chesterfield and Kershaw counties]*
- Click on the various maps of agricultural commodities by county at
https://www.nass.usda.gov/Statistics_by_State/South_Carolina/Publications/County_Estimates/index.php
- ? Which commodity is the most geographically concentrated? *[Tobacco]*
- ? Why is tobacco production in South Carolina so geographically concentrated? *[answers will vary: demand, soil, history]*
- ? Cattle are found throughout the state, but are clustered where? *[the Piedmont/Upstate]*

TASK 5

- Scroll through a series of maps at <https://www.bloomberg.com/graphics/2018-us-land-use/>
- ? At what rate are urban areas in the United States growing? *[about a million acres a year]*
- ? How much of the USA is used primarily for livestock feed? *[41%]*
- ? Seeing how much or how little land is used for various purposes can be surprising. What do you find most surprising? *[answers will vary]*

CREDIT Christopher Krause, University of South Carolina

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