Lesson 4: My Kentucky Home Provides What I Need: How Resources Determine Farm Types in Kentucky

Time Duration: 2 60-minute sessions

Purpose:

- Students will map locations of natural resources and land types within Kentucky.
- Students will analyze their maps to determine:
  - how these resources and land types affect where agricultural businesses are located.
  - economic viability, opportunity, and limitations of certain areas.

Resources & Materials Needed:

- Google Slide Presentation/Teacher's Guide
- Regions Map Activity Sheet
- OPTIONAL - Descriptions of Kentucky's Regions
- Natural Resources Map Activity Sheet
- Ag Production Map Activity & Production Data
- Locate the Farm Activity Sheet - Answer Key
- Students will also need crayons, colored pencils, or markers.

ICE BREAKER:

Use the "Icebreaker" Google Slide presentation - Show the slides to see if students can determine if the photos are of Kentucky landscapes. Answers are available at the end of the presentation if you need help. Ask students for evidence they use to decide.

NATURAL RESOURCES ACTIVITY:

Use the Natural Resources Map Activity Sheet and the "Natural Resources" Slide Presentation

Kentucky Academic Standards

5.G.GR.1 Use a variety of maps, satellite images and other models to explain the relationships between the location of places and regions and their human and environmental characteristics.

5.E.ST.1 Explain how specialization, comparative advantage and competition influence the production and exchange of goods and services in an interdependent economy.

Why is this important?

The availability of natural resources, climate, and physical land characteristics determined where humans settled, and where civilizations and communities grew. It also determined and will continue to help determine where businesses locate. An abundance of resources, whether natural, human, or capital, impacts the economic success of a business and communities.

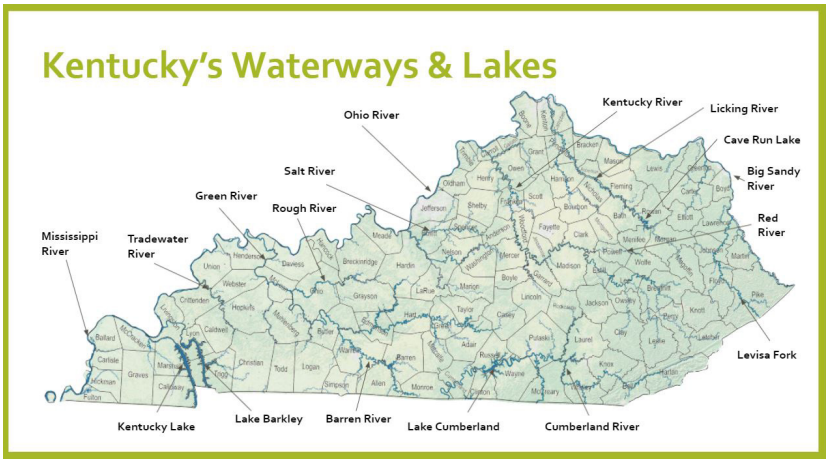
Kentucky's environmental characteristics made this area an appealing place for settlers. These features sustain us today.

Climate:

- Kentucky has a moderate climate, characterized by warm, yet moist conditions. Summers are usually warm, and winters cool. Monthly average temperatures range from a high of 87.6° F to a low of 23.1° F.
- Kentucky's weather patterns are influenced by the Gulf of Mexico, especially during summer.
- Much of Kentucky's precipitation falls in spring, the rainiest season. From south to north, precipitation decreases. Southern Kentucky receives the highest average precipitation, about 50" a year, while the north averages only 40".
- Kentucky is in a path several storm systems follow. Storms happen year-round; however, most storms occur between March and September.

Water:

- Approximately 49 inches of precipitation falls on Kentucky every year. About 40 percent of this water runs off into streams, and 60 percent evaporates or is transpired by plants. This is called the hydrologic cycle.
- There are 13 major river basins containing more than 90,000 miles of streams.
- Kentucky has more navigable miles of water than any other state except Alaska.



- More than 60 miles of streams have been designated "Outstanding National Resource Waters" by the EPA and receive special attention under the Clean Water Act.
- One hundred fourteen miles of nine streams and 26,382 acres of land adjacent to these streams have been designated "Wild Rivers," which have exceptional water quality and aesthetic character.
- **Have students draw in the major rivers on their maps.**

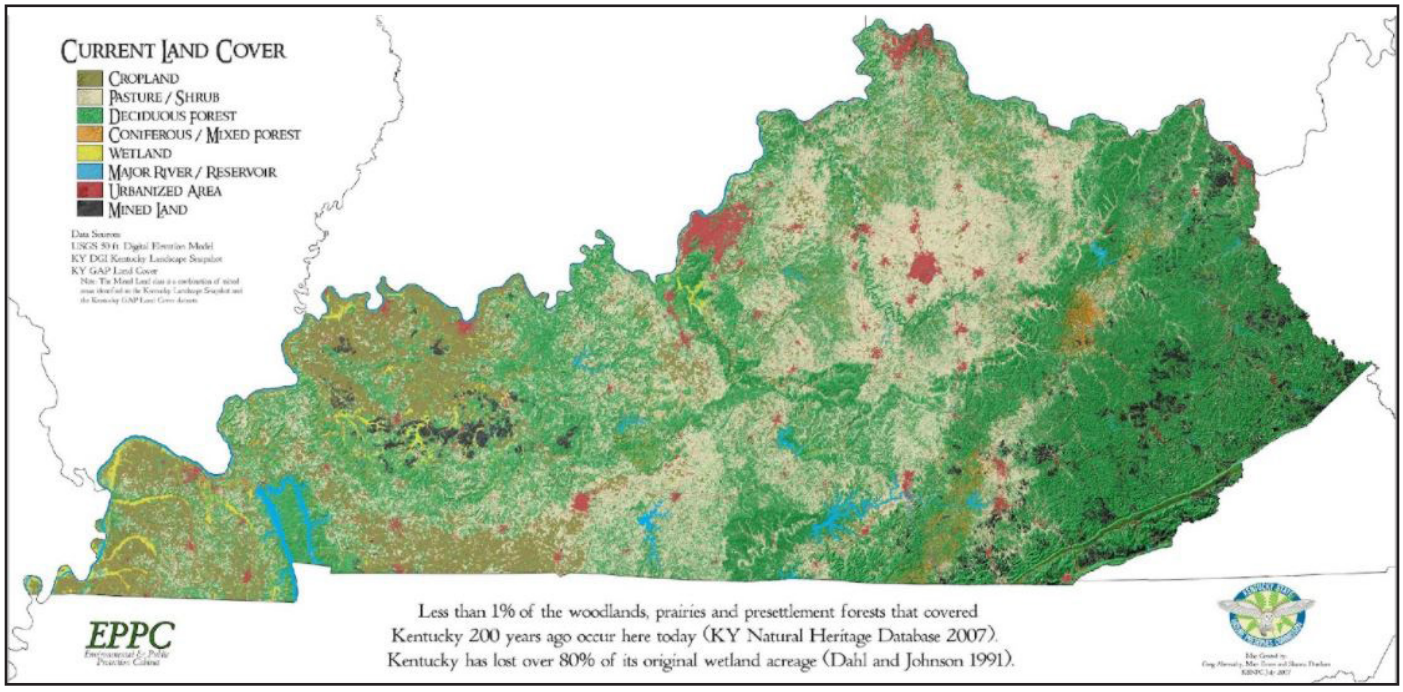
Energy:

- Kentucky is the fifth-largest coal-producing state in the nation. About one-fifth of all operating U.S. coal mines are located in Kentucky, more than any other state except West Virginia and Pennsylvania.
- Kentucky's one oil refinery can process about 291,000 barrels of crude oil per calendar day. It is the 14th largest U.S. oil refinery and provides about 1.6% of the nation's total refining capacity.
- In 2020, about 69% of Kentucky's electricity net generation was coal-fired, the fourth-largest share of any state after West Virginia, Wyoming, and Missouri.
- Kentucky has 22 underground natural gas storage sites that can hold almost 222 billion cubic feet of gas, which is about 2% of U.S. total underground storage capacity.
- In 2020, Kentucky had the ninth-lowest average electricity retail price of any state and the second-lowest price for a state east of the Mississippi River.
- **Have students place colored dots where they will find coal, natural gas, and oil on their maps**.

Rocks & Ore Minerals:

Several rocks and minerals are mined in Kentucky, with limestone being the most plentiful. Water filtered through limestone (calcite) is often credited for producing stronger horses—though beef cattle tend to be located in those same limestone rich areas—and contributing to unique properties of other Kentucky-produced goods.

Note from the Kentucky Geological Survey: The production of minerals and fuels in Kentucky is a multibillion dollar industry. Historically, coal, oil, natural gas, limestone, sand and gravel, clay, fluorite, barite, lead, iron, phosphate, zinc and brines have been produced in the state. These resources have greatly influenced the development of Kentucky by providing raw materials for the early settlers who settled the state and for current industrial and economic development. Electrical power for homes, businesses, and factories; materials for constructing houses, buildings, automobiles, and roads; and products we consume in everyday life come from the earth's mineral and fuel resources. The ability to locate and efficiently use raw materials is important in virtually all economic activity in the state.



Land:

Due to Kentucky's climate, soils, and geologic properties, much of the land can sustain crops, grazing livestock, and forests.

Land Use:

- Forests: 47%
- Cropland: 25%
- Grassland Pasture: 19%
- Special Use (Parks, Transportation, Defense, Industry): 5%
- Urban: 4%

Source: USDA Economic Research Service

OPTIONAL – Have students make their own pie chart for land use.

Have students add green-colored dots to represent counties with 50% or more of land in farms, and orange-colored dots to represent counties with 50% or more of land in forests. There will be some overlap, as farms do have forested land as well.

Kentucky Provides What We Need

Food & Fiber:

Crop, pasture and forest land provides us food and renewable resources like wood and animal products (leather, fats, horn, and bone).

Due to Kentucky's climate, most crops are grown in the spring, summer, and fall. Some farmers can extend the growing season by using greenhouses and plastic tunnels that hold in heat and moisture.

Kentucky's Top Agricultural and Forested Products in terms of sales:

- Poultry
- Horses
- Corn
- Soybeans
- Beef Cattle
- Wood
- Tobacco
- Hay
- Milk
- Wheat

NOTE: The order of how each ranks changes from year to year.
Tobacco and Milk production continue to fall as markets change.
Horses were very close to poultry in 2020.
For the lastest list, see www.kyfoodandfarm.info/ky-ag-facts.

Have students watch the video, Kentucky Farms: Our Farms, Our Food, Our Future.

Activities:

1. Writing Exercise - Write a short essay with the thesis "My Kentucky Home Provides What I Need" detailing the richness of Kentucky's natural resources. Consider including why the early settlers may have found this area of North America appealing.
2. Art/Writing Exercise - Create a poster and a catchy slogan to entice people to settle in Kentucky in the late 1700s or move to Kentucky today. Decide which features would be best to showcase based on the basic needs of humans at that time.

KENTUCKY REGIONS ACTIVITY:

There are many ways that the land of Kentucky may be categorized, but natural resource availability is most closely related to geology and land surface features.

Physiography is the study of land surface features. The shape of land surface is controlled by the effects of weathering and erosion of the bedrock.

Kentucky is divided into several physiographic regions:

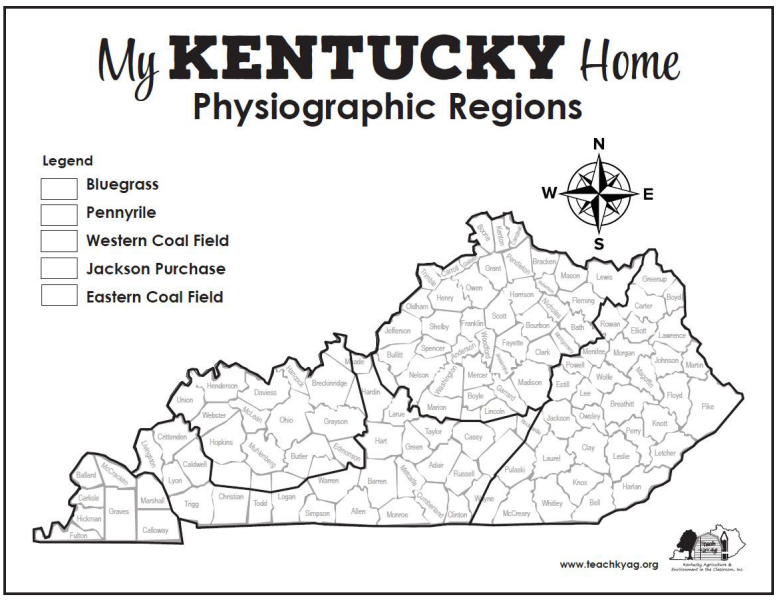
- Bluegrass
- Knobs - surrounds the Bluegrass. An optional map is available without this region defined. KyAEC prefers that it be included since the steep hills, forests, and rocky, clay soils in that region alter agricultural production.
- Pennyrile (Also known as Pennyroyal)
- Western Coal Fields
- Jackson Purchase
- Cumberland Plateau or Eastern Coal Fields

Use the Regions Map Activity Sheet and the "Regions" Google Slide presentation OR have groups of students research each region and share with the class. They will need to provide the following for each:

- Describe the location, land, and water features
- Name a few counties in the region
- Describe the natural resources and agriculture products that can be found there

Have students color in these regions on the activity map and complete the legend.

A notes worksheet for the regions is available.



My **KENTUCKY** Home

Physiographic Regions

Jackson-Purchase Region	Pennyrile Region	Western Coal Fields Region
Describe the Location: Name a few counties there: Describe land and water features:	Describe the Location: Name a few counties there: Describe land and water features:	Describe the Location: Name a few counties there: Describe land and water features:
Knobs Region	**Bluegrass Region**	**Eastern Coal Fields Region**
Describe the Location: Name a few counties there: Describe land and water features:	Describe the Location: Name a few counties there: Describe land and water features:	Describe the Location: Name a few counties there: Describe land and water features:

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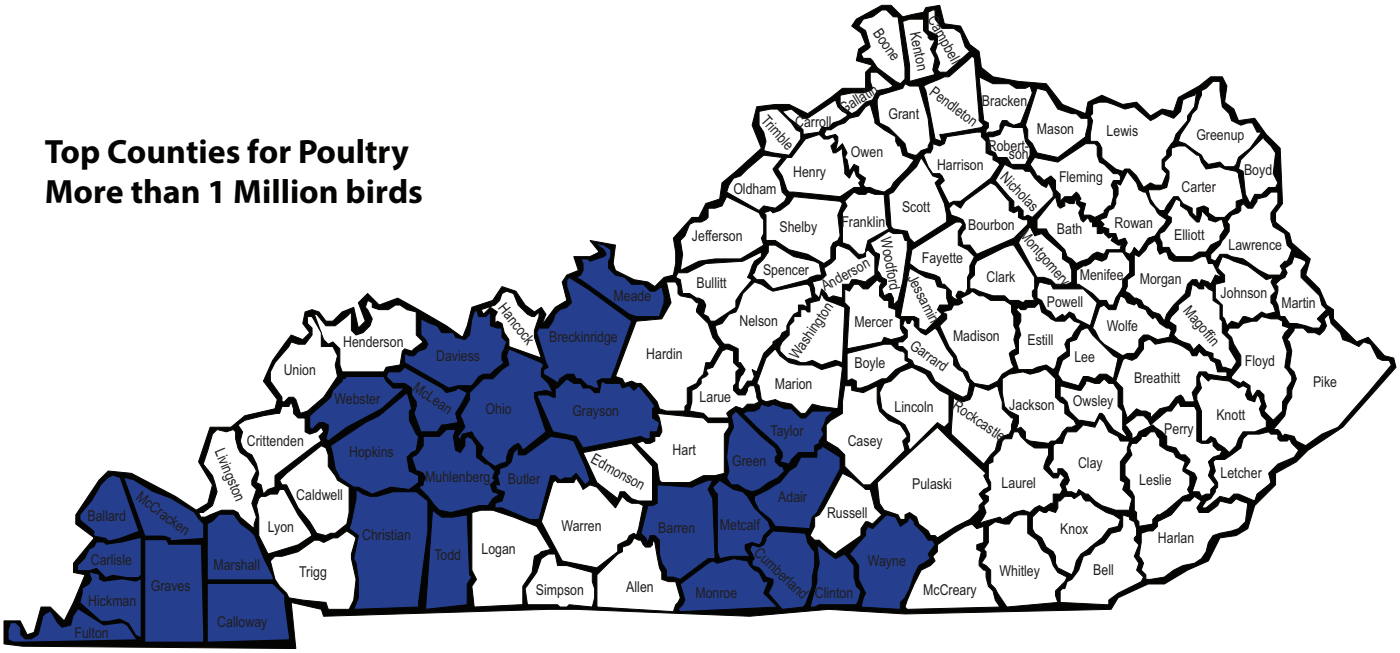
WHERE DOES KENTUCKY AGRICULTURE GROW?

Are crops and livestock are concentrated in physiographic regions? Place students in groups to map different agriculture products.

Use the Ag Products Activity Map & Data Sheets. Students will report where different crops and livestock are produced.

Analysis Questions - You may need to reference your physiographic regions map.

- What crops and animals are concentrated in the center of Kentucky? Do those animals eat those crops?
- Why do you think grains like corn and soybeans are grown in the western half of the state? Think about the characteristics of the regions in the west.
- Based on the maps, what animal can be found in every region? Why?
- Why may chickens and pigs be near the regions where grain is grown?
- What counties are the same for milk and vegetable production? For what area (market) do you think those counties are providing food?
- Which region has the fewest top agriculture counties? Why?



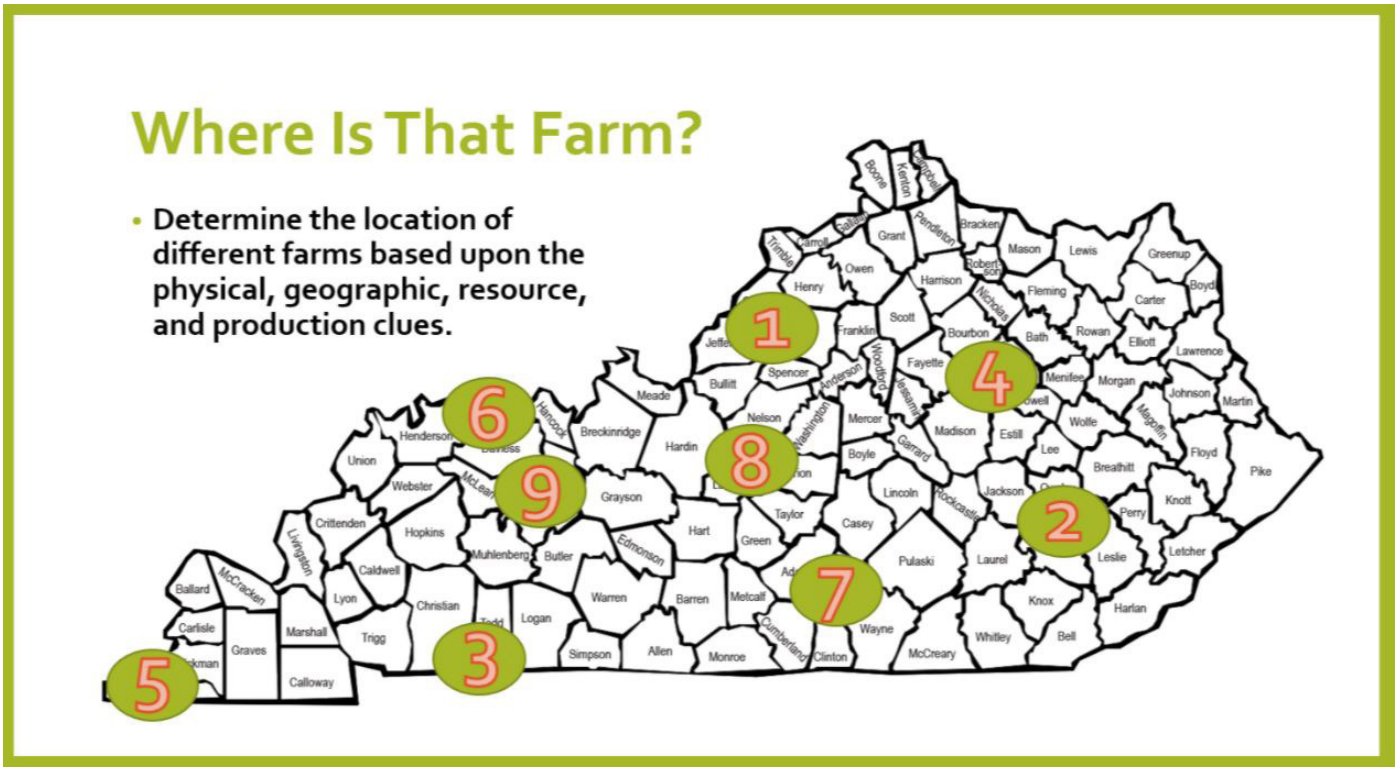
NOTES - Where does Kentucky agriculture grow? Crops and livestock are concentrated in geographic regions.

- Crops that require large equipment for energy efficient planting and harvest are found in the areas with flatter profiles. That land is more frequently found in the western half of the state.
- Livestock that eat the most of those grains (poultry and pigs) will be raised near their food source to save money on transportation costs.
- Grazing livestock, such as cattle, are concentrated in the Pennyrile and Bluegrass regions, which have more rolling hills less suitable for crop production.
- Smaller grazing animals, such as sheep and goats, do not need as much space as cattle and horses. Goats eat plants in more forested areas.
- Some products, such as vegetables and milk, are most often found closer to where they are processed and sold. The counties in the Pennyrile region most likely sell to Nashville, TN, where there is a greater population.

WHERE'S THAT KY FARM? ACTIVITY

Use the Locate the Farm Activity Sheet.

Use what students have learned about Kentucky's regions and resources, and have them try to match the Kentucky farm with its location.



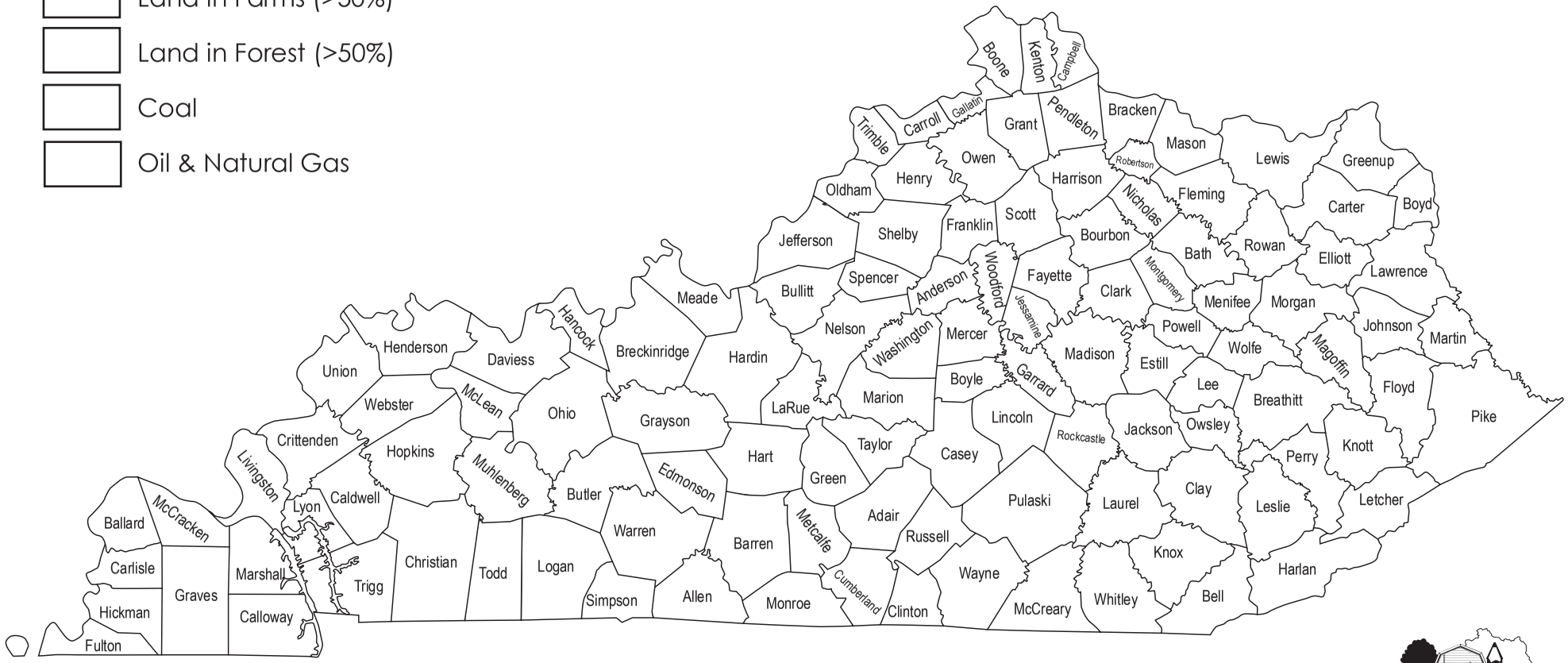
KENTUCKY FOOD AND FARM FILES

Want to learn more about Kentucky agriculture? Check out www.kyfoodandfarm.info. This is a comprehensive collection of articles about Kentucky food, farmers, professionals, businesses, and organizations, and issues. Many are available in printable format with Common Core reading comprehension questions, or you may use a general set of questions for every article.

My KENTUCKY Home
Provides What I Need

Resources Map Legend

- ☐ Major Rivers, Streams, & Lakes
- ☐ Land in Farms (>50%)
- ☐ Land in Forest (>50%)
- ☐ Coal
- ☐ Oil & Natural Gas



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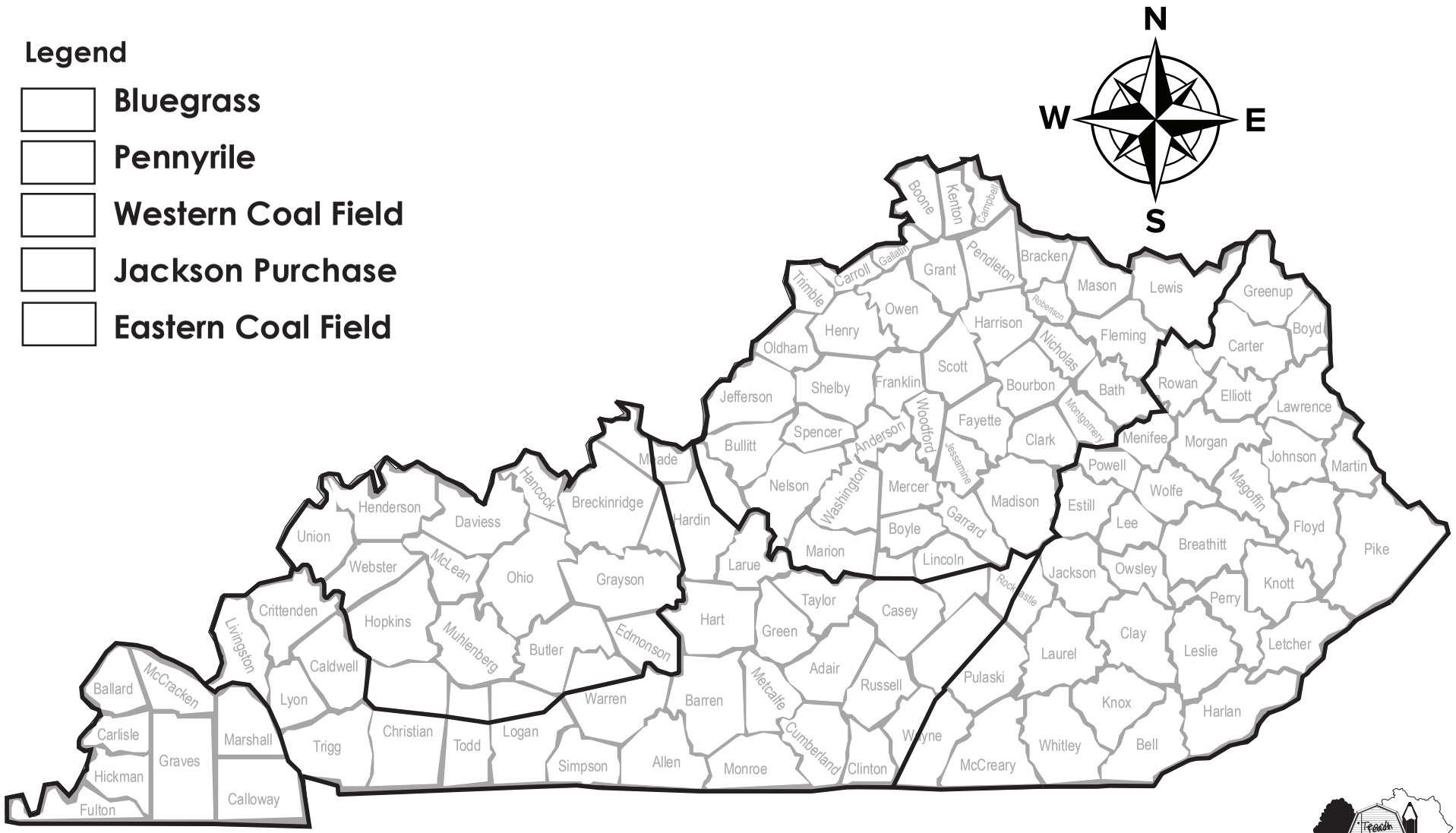
Physiographic Regions

Legend

- ☐ Bluegrass
- ☐ Pennyrile
- ☐ Western Coal Field
- ☐ Jackson Purchase
- ☐ Eastern Coal Field



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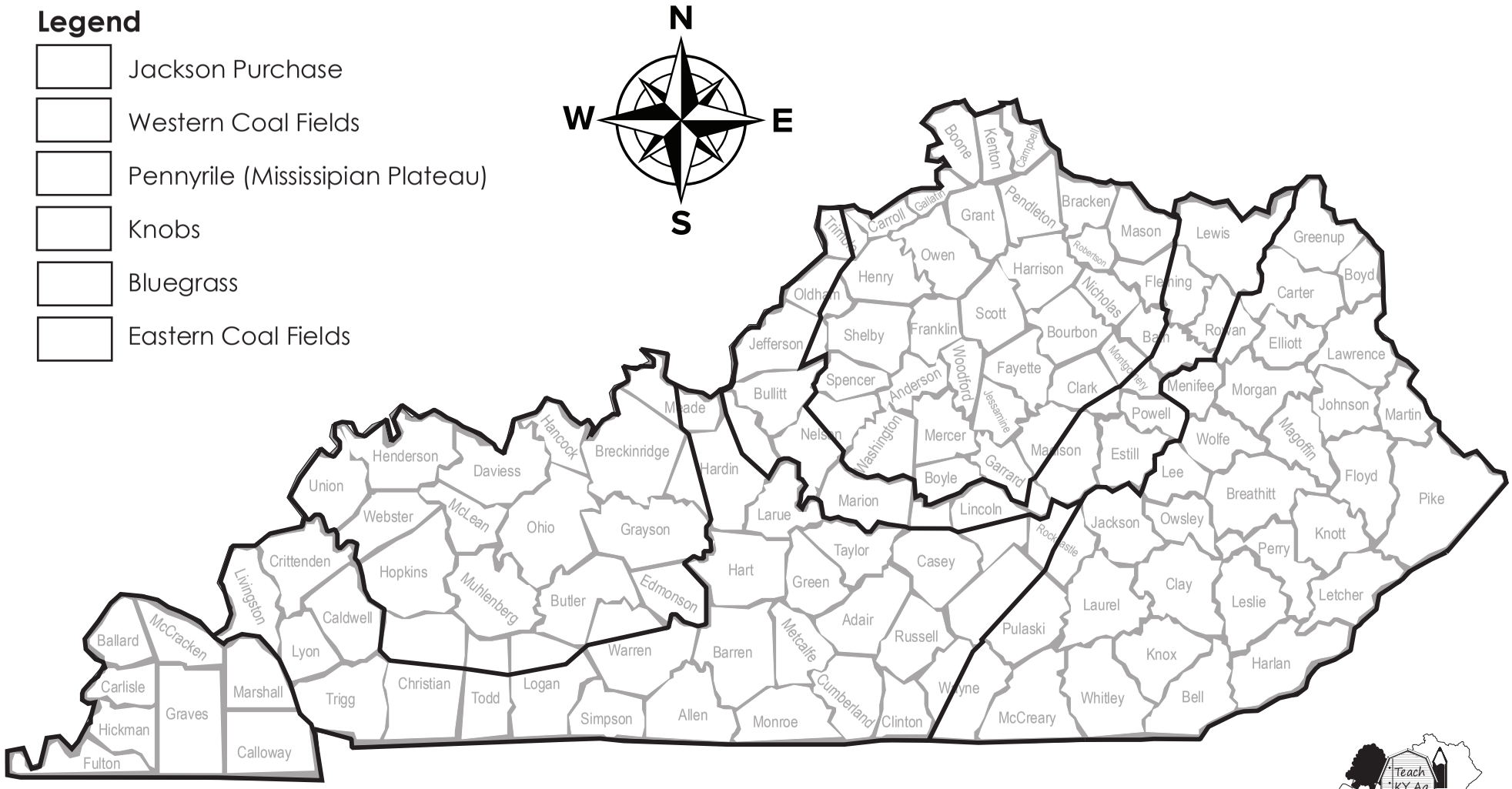
Physiographic Regions

Legend

- Jackson Purchase
- Western Coal Fields
- Pennyrile (Mississipian Plateau)
- Knobs
- Bluegrass
- Eastern Coal Fields



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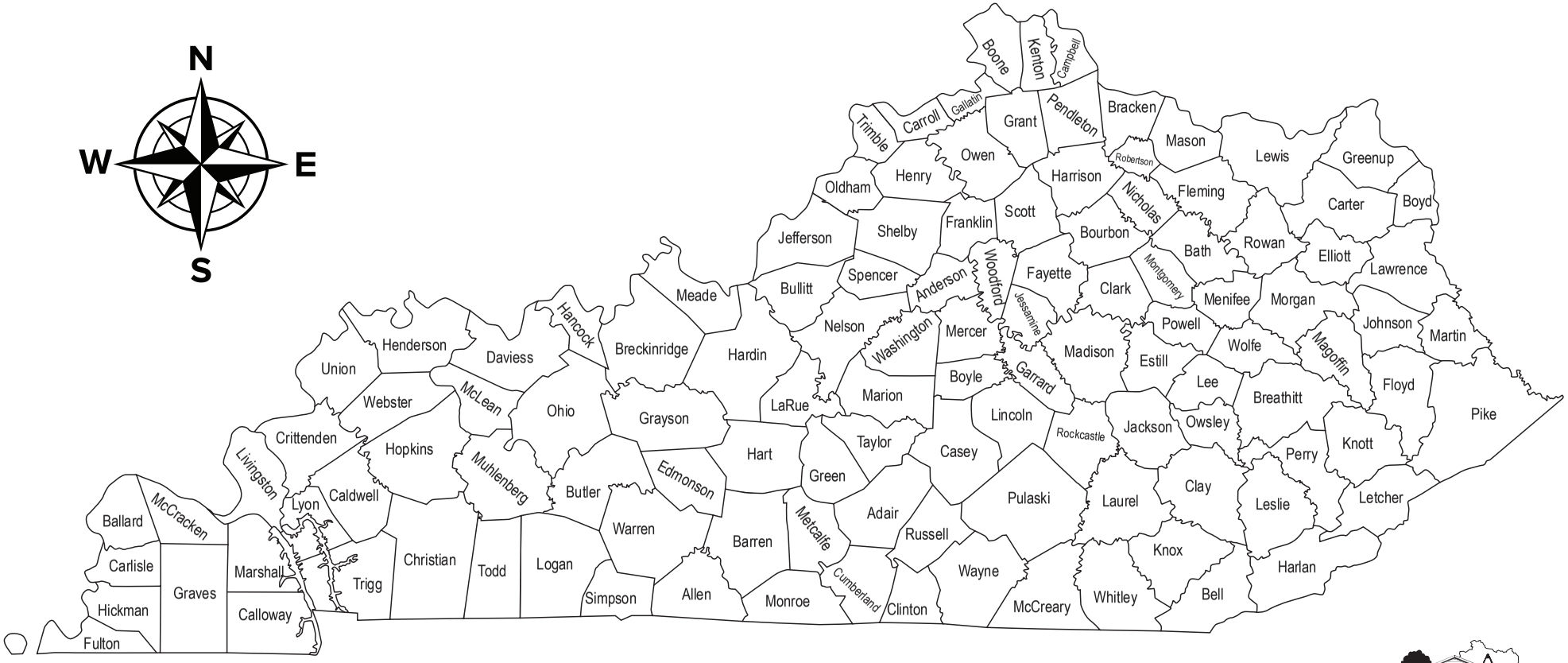
Agriculture Production

Top counties for _____



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Kentucky Ag Products Data

Corn
More than 10,000 acres

Union	Christian
Daviess	Graves
Henderson	Logan
Webster	Todd
Hickman	McLean
Warren	Simpson
Calloway	Caldwell
Carlisle	Hopkins
Fulton	Hardin
Ballard	Ohio
Trigg	Nelson
Crittenden	Barren
Butler	Shelby
Breckinridge	LaRue
Meade	Muhlenberg
Taylor	McCracken

Wheat Acres
More than 2,500 acres

Christian	Carlisle
Logan	Union
Todd	Fulton
Simpson	Daviess
Graves	McLean
Warren	Nelson
Hickman	Henderson
Trigg	Marshall
Ballard	McCracken
Calloway	Crittenden
Caldwell	LaRue

Soybean Acres
More than 10,000 acres

Daviess	Christian
Graves	Henderson
Logan	Union
Fulton	McLean
Webster	Todd
Hickman	Calloway
Warren	Breckinridge
Ballard	Hopkins
Hardin	Carlisle
Simpson	Ohio
Shelby	Nelson
Caldwell	Butler
LaRue	Muhlenberg
Marshall	McCracken
Meade	Barren
Trigg	Marion
Grayson	Crittenden
Livingston	Fleming
Pulaski	Green
Taylor	Adair
Lewis	Edmonson
Lincoln	Bourbon
Mason	Henry
Trimble	Russell
Spencer	

Vegetable/Melon Acres
More than 100 acres

Todd	Daviess
Christian	Allen
Shelby	Pulaski
Scott	Boone
Trigg	Lincoln
McCracken	Hart
Barren	Harrison
Owsley	Grayson
Madison	Meade
Whitley	Casey
Fayette	

Hay/Pasture Acres
More than 10,000 acres

Barren	Pulaski
Madison	Shelby
Washington	Harrison
Bourbon	Fleming
Nelson	Warren
Breckinridge	Owen
Lincoln	Garrard
Adair	Grayson
Henry	Marion
Allen	Mason
Clark	Casey
Mercer	Hart
Monroe	Bath
Scott	Hardin
Metcalfe	Montgomery
Green	Laurel
Pendleton	Grant
Logan	Jessamine
Boyle	Meade
Russell	Anderson
Woodford	Taylor
Nicholas	Christian
Bracken	Boone
Jackson	Crittenden
Franklin	Clinton
Fayette	Ohio
Carter	Wayne
Rockcastle	Morgan
Livingston	LaRue
Muhlenberg	Spencer
Lewis	Whitley
Edmonson	Cumberland
Campbell	Robertson
Butler	Hopkins
Todd	Graves
Trimble	Kenton
Carroll	Greenup

Poultry #s

More than 1 million chickens

Graves	McLean
Hickman	Webster
Ohio	Hopkins
Monroe	Breckinridge
Calloway	Ballard
Barren	Muhlenberg
Daviess	Clinton
Adair	Wayne
Carlisle	Butler
Fulton	Grayson
Marshall	Todd
Meade	Green
Taylor	Christian
Metcalfe	McCracken

Cattle #s

More than 25,000 cattle

Barren	Madison
Pulaski	Lincoln
Bourbon	Monroe
Allen	Marion
Garrard	Nelson
Mercer	Warren
Fleming	Washington
Breckinridge	Adair
Grayson	Clark
Casey	Hart
Boyle	Shelby
Russell	Logan
Metcalfe	Harrison
Montgomery	Hardin
Bath	Scott
Green	Henry
Christian	Mason
Owen	

Horse #s

More than 5,000 horses

Fayette	Jefferson
Bourbon	Scott
Woodford	Shelby

Milk Sales

More than $1 Million in sales

Barren	Pulaski
Logan	Shelby
Adair	Hardin
Todd	Mason
Warren	Green
Christian	Grayson
Monroe	Washington
Lincoln	Simpson
Marion	Henry
Metcalfe	Graves
Nelson	Trigg
Taylor	Allen
Russell	
Fleming	
Casey	
Hart	

Hog #s

More than 500 hogs

Daviess	Marshall
Carlisle	Hickman
Warren	Todd
Marion	Crittenden
Hardin	Breckinridge
Casey	Clay
Trigg	Nelson
Fleming	Laurel

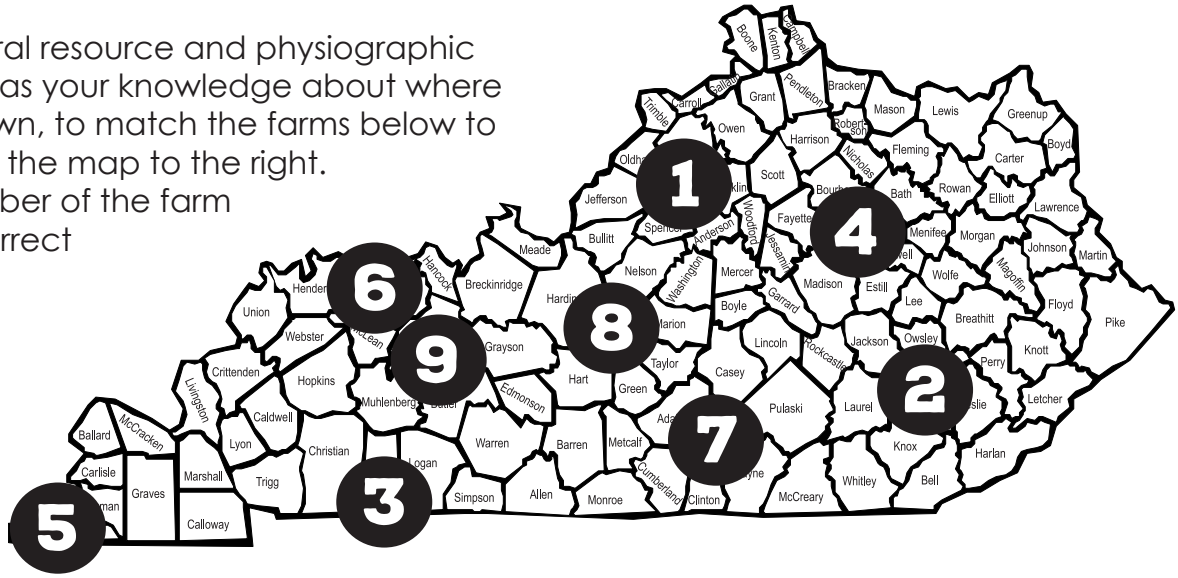
Sheep/Goats #s

More than 1,000 sheep & goats

Hart	Mercer
Breckinridge	Shelby
Pulaski	Bourbon
Crittenden	Warren
Allen	Ohio
Clark	Washington
Fleming	Grayson
Harrison	Mason
Henry	Wayne
Logan	Marion
Lincoln	

Where is that **KENTUCKY** Farm?

Use your natural resource and physiographic maps, as well as your knowledge about where crops are grown, to match the farms below to its location on the map to the right. Write the number of the farm next to the correct description.



_____ The Thompson family grows corn, soybeans, and wheat in the Pennyrile region and in northern Tennessee. They are close to Hopkinsville, where they sell their grain.

_____ The Smith family raises several hundred Angus beef cows, hay, and grains on rolling hills in the south central part of Kentucky.

_____ The Gilkison family raises beef cattle, corn, soybeans, and recently started growing black raspberries to make jams under the Kentucky Proud label. They are on the eastern edge of the Bluegrass region.

_____ The Cecil family grows fruits and vegetables for local customers and grocery stores across the United States. They have the largest watermelon farm in Kentucky, and are located near the Ohio River. They also provide farm services for their many neighbors who grow grain crops.

_____ The McCoun family raises corn, soybeans, wheat, beef cattle, and hay near a metropolitan area. They sell their corn and soybeans to an Indiana grain terminal on the Ohio River to be exported to countries across the globe. The straw from their wheat is sold to local horse farms in their area.

_____ The Sanger family raises corn, soybeans, and wheat, and is the only farm in Kentucky that raises rice. Due to their location on the Mississippi River in the Jackson Purchase region, they are able to flood the rice fields so it grows well. Their corn and soybeans are sold to poultry and hog farms.

_____ The Luttrell family raises corn, soybeans, beef cattle and chickens. Their chicken ends up in grocery stores around the country. They are located in the Western Coal Fields and their neighbors have oil wells on their property.

_____ The Bowling Family raise beef cattle, goats, sheep, pigs, and vegetables. Much of their land has steep hills that is suitable for grazing. Their vegetable gardens are on the flatter ground. They want to make sure their customers have access to locally-grown food in the Eastern Coal Field region.

_____ The Ragland family raises corn, soybean, wheat, and many mother hogs. The sows are kept in temperature controlled buildings so they stay warm in the winter and cool in the summer for comfort. The Raglands' ancestors purchased this land in the early 1800's and were neighbors to Abraham Lincoln's parents. It is located between the Knobs and the Pennyrile regions.

Learn more about other Kentucky farm families at kyfoodandfarm.com.

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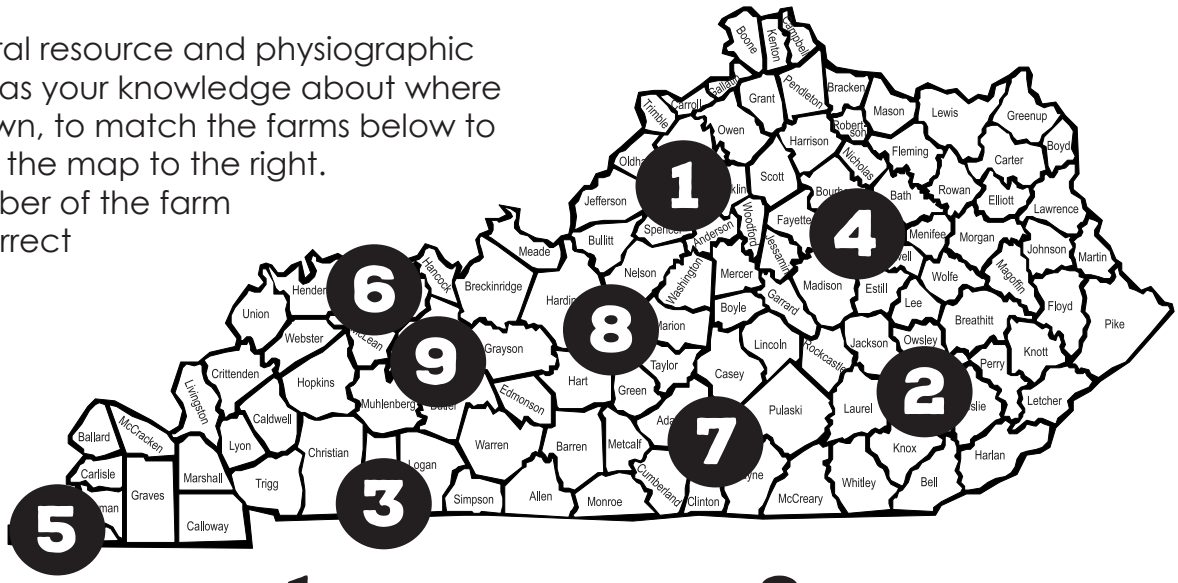

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