Farmland

Skills: High School, Middle School, Principles of Agriculture, Food, and Natural Resources

Objective: The student will explore topics such as media influence in agriculture as it relates to consumers and farmer/ranchers. They will become familiar with challenges today's farmers and ranchers face. Topics in the evolution of agriculture will be addressed in the following activities.

Background: *Farmland, The Evolution of Tradition* is an award winning documentary about the next generation of American farmers and ranchers. Most Americans have never stepped foot on a working farm or ranch or ever had the opportunity to talk to the people who grow and raise the food we eat. *Farmland* gives us an up close and personal look at six young famers and ranchers and the latest farming producers, practices and technologies that are changing and improving the landscape of modern agriculture. Nothing is off limits in the film, from GMO and organics to animal welfare and consumer trust.

Agriculture in Texas:

Agriculture is deep in the heart of Texas! With nearly a quarter of a million operations covering more than130 million acres, Texas has more farms and ranches than any other state. Texas has about 72,000 more farms and 4 million more acres of farm and ranch land than Nebraska, Kansas and Oklahoma combined.

Morning Ag Clips, November 16, 2014
10 Awesome Things About Texas Ag

Procedure: The following lessons are based on Farmland the movie. Most of the lessons do not require the complete viewing of the film. U.S. Farmers and Ranchers Alliance has developed 6 lesson plans, with accompanying activities. To access the lessons and video segments go to: www.DiscoveringFarmland.com Then, click Lessons. The video clips will support the lessons.

Additional lessons were taken from the National Association of Agricultural Educators website and were created by Henry Paris, Arlee Baker, and Laura Bidne.

Materials

The material needs within this unit are unique to each lesson. When appropriate, master copy and answer key is provided.

Farmland Video segments
Meet a Farmer Videos on Vimeo
https://vimeo.com/channels/txfbaitc
www.texasfarmbureau.org
Scroll to Vimeo, bottom of page

TEKS

§130.2 Principles of Agriculture, Food, and Natural Resources

Knowledge and Skills

1. ABCD 2. ABCE 4.ABCDEF
5. ABCDEF 6.ABCDEFGH
7.ABCDEFG 8.ABCD
9. ABCD 10. ABCDE
11. ABCDEFGHI
12. ABCD 13. ABCD
14. ABCDEFGH
15.ABCDEF

TEXAS FARM BUREAU®

CULTIVATING CONVERSATIONS

DISCOVERING FARMLAND

ABOUT FOOD & AGRICULTURE

The Industry of Farming

Lesson Plan

Lesson Summary:
In this lesson, students will examine how agriculture has evolved into today's farming industry. Students will explore how agricultural products are developed in the United States and how agriculture is a major industry today. Students will evaluate data that shows trends in crops and agriculture activity in regions of the U.S. that experience different amounts of rainfall and sunlight. Students will analyze this data to construct an explanation as to how agriculture is a unique and vital industry that is dependent on specific conditions, many of which are outside the control of farm and ranch owners. Students will then investigate technologies farmers use to expand and improve their expected yield, such as irrigation techniques, soil management, the use of genetically modified organisms (GMOs), and applications.

Lesson Duration: One class period (45-60 minutes)

Essential Questions:
- What are the major agricultural products in different regions of the United States?
- How can weather in a region of the United States influence crop production in that region?
- What factors have an impact on the economics of farming/ranching around the United States?
- What technologies and techniques can farmers use to make farming/ranching more predictable and successful?

Learning Objectives:
Students will:
- Identify factors that play a role in the economics of agriculture as an industry
- Analyze and interpret data of agricultural trends in relationship to varying weather conditions
- Draw conclusions about how agricultural production is influenced by natural and market factors that are often outside the control of farmers and ranchers
- Investigate technologies farmers use to influence their expected yield

Standards:
Next Generation Science Standards:
- **HS-ESS3-1:** Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
- **HS-ESS2-3:** Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.

Agriculture, Food and Natural Resources (AFNR) Cluster: Agribusiness Systems Pathway Knowledge and Skill Statements:
- **AGC09.02:** Select, research, and examine critical aspects of career opportunities in one or more AFNR career pathways in order to gain an understanding of the breadth of occupations within this cluster.

- **AGC10.04:** Envision emerging technology and globalization and project its influence on widespread markets to demonstrate an understanding of technologies and trends that will impact the AFNR industry.

- **AGPG01.06:** Use sales and marketing principles common to agribusiness systems to accomplish AFNR business objectives

Materials
Note: *All ancillary materials are provided at the end of this document.*
- *Farmland* video segments
    - **Video Segment #1: Farming Economics: Good, Bad & Ugly:** *This clip discusses challenges and risks involved in farming, including the difficulty of getting started and maintaining profitability.*
    - **Video Segment #2: The Use of GMOs:** *This clip discusses the use of GMOs.*
    - **Video Segment #3: The Rewards of Farming:** *This clip discusses the rewards to farming despite challenges.*
- Teammate Brainstorm Recording Sheet handout
- Major U.S. Crops from 1950-2007 (distribute or display)
- Website: USDA State Fact Sheets
- Weather Card Sort handout
- Examples of Extreme Weather Events handout
- 3-2-1 Exit Slip handout

Vocabulary
- **Cropland:** Land that is suitable for or used for crops. According to the USDA definition, cropland includes:
    - Harvested land
    - Land used only for pasture or grazing
    - Land on which crops failed or were abandoned.
    - Fallow land
    - Land used for cover crops or used for soil improvement but not pastured or grazed

- **Farm:** According to the USDA definition, a farm is any place from which at least $1,000 worth of agricultural commodities were produced or sold, or normally have been sold, in a year.

BACKGROUND FOR TEACHER
This lesson focuses on the means and methods of conventional farming. Students may have preconceptions based on media reports or conversations about the nature of farming today. Because of farms and ranches, and modern mechanized food production, the United States has an abundance of food compared to many other countries around the world. Despite the low cost and availability of many types of food many Americans may never have visited a farm or ranch. Many Americans also harbor misunderstanding of how their food is produced.

Numerous resources are available for students to learn about agriculture. One area of focus for this lesson is the different emphasis on major agricultural products in various regions of the United States. For example, corn and wheat are key crops in the Midwest. The Southeast and Western regions of the United States produce most of the country's fruit crops.

Regional differences emphasize the impact of weather, so the lesson helps students connect weather in a region of the United States to being a dominant influence on crop production in that region. For example, in addition to typical daily and seasonal weather, the different regions of the U.S. experience different types of severe weather events (e.g., tornado, blizzard, flood, hurricane, or drought). Although severe weather events do not occur often, they can have an economic impact on the farming and ranching industries. Agriculture, perhaps more than other industries, is impacted not only by uncertain weather, but also by various market factors. Hence the economics of farming and ranching around the United States depends on a complex mix of weather patterns, costs of fuel, feed and fertilizer, local supply and demand and even international market forces.

With such variation, farmers are increasingly turning to various technologies and techniques to make farming and ranching more predictable and hence profitable. The implementation of such technology is highly specific, depending on the nature of the product, whether meat, dairy, grain, vegetable, fruit and so on. Broadly speaking, new technologies include remote sensing, soil and crop sensing, mobile computing, genetically-modified organisms, equipment automation and precision seed or input applications. Given such use of technology to overcome the challenges of farming and ranching, commercial agriculture will continue to be among the most important of our country's industries.

Procedure:

ENGAGE

1. Choose a student and ask them to describe the most recent meal they ate.

2. Students write in their notebooks the most recent meal they ate in the form of a list.

3. Ask students to note beside each food the where each item in the meal originated.

4. Ask students to consider generally where their food comes from and how they access food. Students may list grocery stores, restaurants, and farmers markets. Guide students to think further about food sources by asking questions such as the following:
   - Where do grocery stores and restaurants get their food?
   - Where does the food from farmers markets come from? Do the people running the market or stalls grow it themselves?
   - Do we have local farms?

5. Students revise the list of the food items in their meal to state the ultimate origin, not just a supermarket or factory.

6. Explain to students that they will learn how nearly all food is produced in commercial farms and ranches.

7. Reveal misconceptions about farming and ranching by asking students to consider the statements below. Display statements one at a time and ask students to indicate if they agree or disagree with each by giving a "thumbs up" or "thumbs down." At this time, do not indicate whether or not their responses are accurate.
   - Most farms and ranches are run by large corporations.
   - Small farms and ranches are not important to our food supply.
   - All Americans have access to locally produced food.
   - The number of Americans going into farming or ranching as a career is increasing.

EXPLORE

1. Distribute **Teammate Brainstorm Recording Sheet** and play **Video Segment 1**. As students are watching, ask them to note (in the "I shared..." section) risks involved in farming and ranching. Students may note information from the video or ideas they think of while watching the video.

2. Group students into pairs to discuss what they observed in the video. Guide students to use their Teammate Brainstorm Recording Sheet to capture what their partner recorded. As partners are sharing, students should be writing down main ideas from their conversation. Have students share their findings with the whole group.

3. Display or distribute **Major U.S. Crops from 1950-2007**.

4. Ask questions to review the data then help students build understanding by asking questions, such as:
   - What are the major agricultural products produced in the U.S.?
   - What does this data tell you about agriculture in the U.S.?
   - What patterns do you see in the data?
   - Who could use this data? How could farmers and ranchers use it?
   - Are there any foods you commonly eat that are not major agricultural products of the U.S.? (Remind students that this table only displays major crops.).

5. Choose a student and ask him/her to name one of the major foods produced in their state. Choose another student and ask him/her to name another food produced in their state

6. Students work in small groups to explore the website USDA State Fact Sheets to learn about the *Top Agricultural Commodities* in their state.

7. Students discuss whether or not the data confirmed or contradicted their initial thinking. (If it is not possible for teams to work on computers, display the page so all students can see it and examine the data as a group.)

8. Working in their groups, students investigate a state in a different region on the USDA State Fact Sheets. (Either assign states or require approval of selections so each group explores a different state.)

9. Each group identifies the *Top Agricultural Commodities* in its assigned state and records their findings on a map of the U.S. (e.g., placing sticky notes on a classroom map, writing on overhead transparency of map, or dragging notes to whiteboard map).

10. Groups discuss possible reasons different agricultural goods are grown or produced in different regions of the U.S. If needed, ask questions to guide students' discussion to include typical rainfall, sunlight, soil types, pests, and weeds in each region.

11. Still working in their groups, students research a region with regard to one of these environmental variables. For example, one group might investigate rainfall, sunlight, and common pests of the Southwest, while another researches the same variables for the Northeast. (Note: If online group research is not possible, consider displaying state or regional data about some of these variables using webpages such as Average Annual Sunshine by State or Average Annual Precipitation by State. If time is limited, limit the number of variables each group explores.)

12. Distribute the **Weather Card Sort** to each group. Guide groups to review the types of weather and match them to how this weather could influence crop production. (Note: The cards are provided in a table as the Answer Key and will need to be cut and shuffled for students.)

13. Review and correct or confirm students' responses. Ask students if they have experienced any of these weather patterns locally. Depending on their region, students may have experienced one or more.

14. Distribute or display **Example of Extreme Weather Events** to small groups of students (or search on the Internet for a similar infographic). The example provided displays a national overview of climate anomalies and events by region in July 2015. Explain that this figure organizes the U.S. into regions to look at regional trends.

15. Ask students to review the different types of anomalies and events and place their cards on regions that match.

16. Guide students in an analysis of their map using questions such as the following:
    - Are all weather events found across the U.S.?
    - Would one weather event impact all farmers in the U.S.?
    - How might regional weather affect which crops farmers choose to grow?
    - How might severe weather events impact farmers' crops or ranchers' livestock?
    - What impact might it have on consumers?

EXPLAIN

1. Groups present their findings with the whole class. Each group explains its conclusions of why some crops are grown in particular areas of the country but not others.

2. Lead a class discussion on the connections between environmental variables and the foods produced in the different regions.

ELABORATE

1. Show **Video Segment 2**.

2. Working in small groups, students research one use of GMOs in agriculture. Each group chooses a specific GMO (alfalfa, canola, corn, cotton, papaya, potatoes, soybeans, etc.) for further investigation.

3. Groups create a concept map to describe and explain their GMO including its particular benefits and limitations. Encourage groups to consider the economics of their GMO. An optional resource is located at GMOAnswers.com: https://gmoanswers.com/ask/what-difference-cost-production-gmo-vs-non-gmo (For example, high-yielding rice varieties may require greater inputs of fertilizer and pesticide, which could offset any increase in revenue from higher yields.)

4. Groups then consider GMOs as one of several different kinds of technologies used to increase yields and reduce economic risk. Each group researches new technologies applicable to its GMO and adds this information to their concept map. As students work, remind them to consider their data sources and identify any potential biases in the information on the site.

5. Assign students to further research new technologies outside the classroom. Students may work individually, in pairs, or in small groups. The aim is for them to explore how biological, chemical and information technologies help farmers make their industry more predictable and successful. Encourage students to consider how adoption of new technologies helps farmers and ranchers to compete in the global marketplace. To focus their research, students can review the online resources, and then choose a particular technology, crop and region to research in detail. (Advise students of the follow-up report required for evaluation.)

6. Ask students to consider why people might continue to choose farming and ranching careers despite the challenges. Play **Video Segment 3**. As students are watching, ask them to note (in the "I shared..." section) rewards involved in farming and ranching. Students may note information from the video or ideas they think of while watching the video.

7. Group students into pairs to discuss what they observed in the video. Guide students to use their **Teammate Brainstorm Recording Sheet** to capture what their partner recorded. As partners are sharing, students should be writing down main ideas from their conversation. Have students share their findings with the whole group. Students may conclude that, despite the risks, the rewards of farming and ranching are significant.

EVALUATE

1. Students complete a 3-2-1 Exit Slip on their way out. This will help students summarize their learning and comprehension of the lesson.

2. Review the students' 3-2-1 Exit Slips and determine if there are any questions that need to be addressed and identify areas of student interest for further study.

FOLLOW-UP

As part of Evaluate, students prepare and submit a report on new agricultural technologies. Encourage students to brainstorm a suitable format for their report, whether written, digital or audiovisual (slide show, skit, science poster, web page, etc.). Students present their final report to the class. Provide students with built-in checkpoints with specific dates to meet and discuss their progress, provide assistance and create their reports. Check in at one week. After two weeks students present their completed report with answers to the following questions:

- What are the top five new technologies helping farmers and ranchers to make agriculture more predictable and successful?
- What technologies can farmers and ranchers use to maximize crop yields while minimizing environmental impacts?
- What kinds of technologies and techniques are specific to your chosen crop and region to make farming and ranching more predictable and hence profitable?
- How does adoption of new and emerging technology help farmers and ranchers compete in the global marketplace?

Resources:

- United States Department of Agriculture: In the News
- The Flood of 1993
- National Centers for Environmental Information: National Overview – June 2015
- Farm Industry News: 20 Technologies Changing Agriculture
- Business Insider: 15 Emerging Agriculture Technologies That Will Change the World
- Forbes: The Future of Agriculture? Smart Farming

Major U.S. Crops from 1950-2007

Table 1
Acreage and revenues, major crops, 1950-2007

Commodity	2007 Harvested acres		Percentage of all crop revenues		
	Acres (millions)	*Percentage*	2007	1982	1950
Field crops	**299.7**	**96.4**	**63.2**	**73.8**	**74.1**
Barley	3.3	1.0	0.5	1.1	1.9
Corn	86.3	27.7	22.7	17.7	9.2
Cotton	10.5	3.4	4.3	6.2	23.1
Hay	58.1	18.7	4.0	2.8	2.9
Oats	1.5	0.5	0.1	0.5	2.1
Rice	2.8	0.9	1.4	2.1	1.5
Sorghum	6.7	2.1	0.9	2.1	1.2
Soybeans	63.9	20.6	15.4	17.3	5.4
Tobacco	0.4	0.1	0.9	4.6	8.6
Wheat	50.9	16.4	7.6	13.6	14.0
Other field crops	15.5	5.0	5.4	5.8	8.3
High-value crops	**11.1**	**3.6**	**36.8**	**26.2**	**25.9**
Vegetables, melons	5.8	1.9	12.9	11.2	11.6
Fruits, nuts, berries	5.3	1.7	12.4	9.4	9.6
Greenhouse/nursery	na	na	11.5	5.6	4.7
All crops	**310.8**	**100.0**	**100.0**	**100.0**	**100.0**

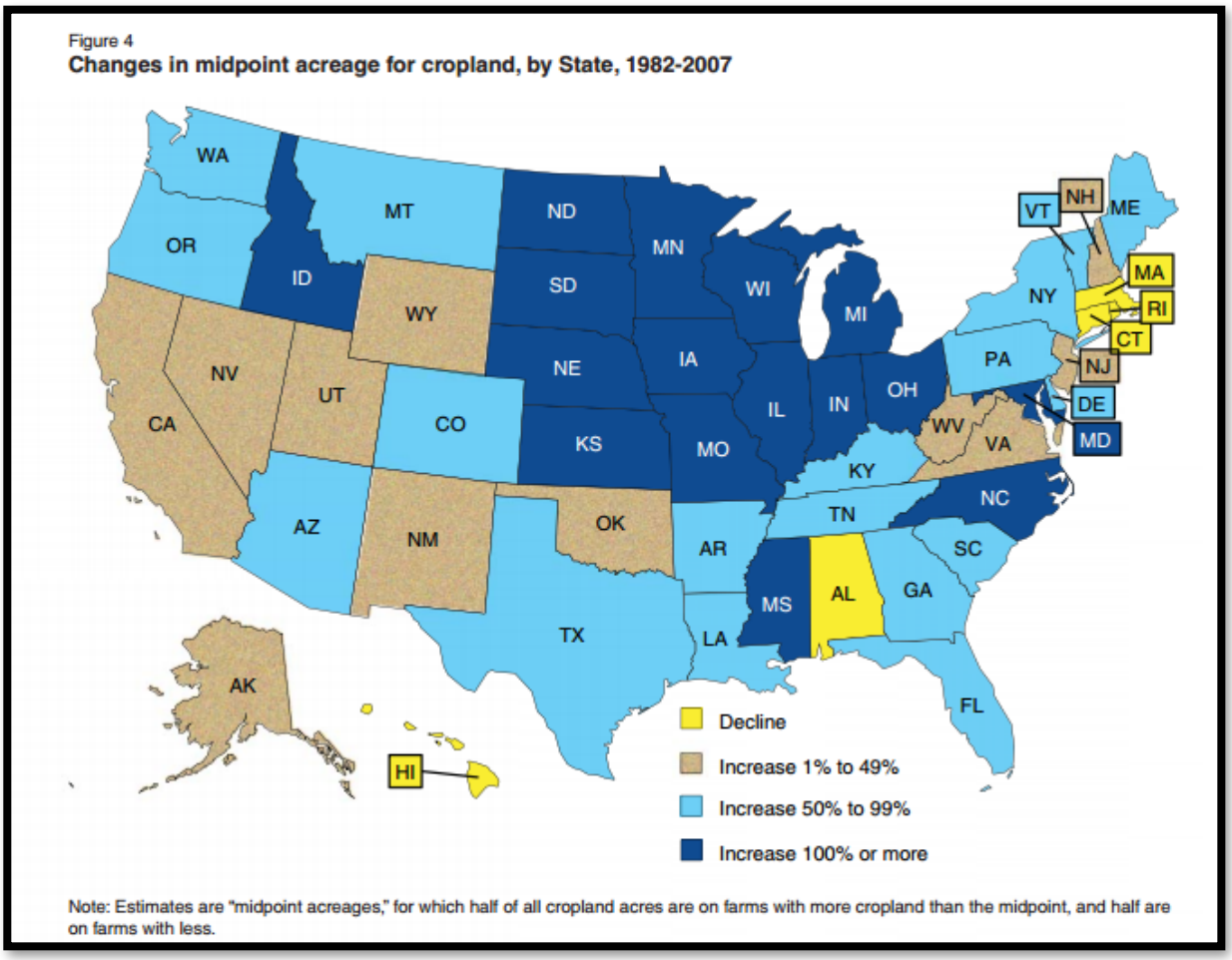
Note: The corn and sorghum estimates exclude crops raised for silage, which are reported in "other field crops". The vegetable acreage estimates include harvested acreage of potatoes and dry beans, and field crops acreage estimates exclude them, to make them consistent with the cash receipts estimates.

Sources: Harvested acres are from USDA, National Agricultural Statistics Service, Census of Agriculture. Cash receipts are from Economic Research Service, www.ers.usda.gov/data/FarmIncome/finfidmu.htm.

Teacher Note: Four crops (corn, hay, soybeans, and wheat) accounted for over 83 percent of harvested crop acres in 2007. Harvested acres do not correspond closely to cash receipts for crops. The three high-value categories – vegetables and melons; fruits, nuts, and berries; and greenhouse/nursery crops – accounted for nearly 37 percent of all cash receipts from crops in 2007 but less than 4 percent of harvested acreage.

Source: *http://www.ers.usda.gov/media/1156726/err152.pdf*

Changes in Cropland by State from 1982-2007



Source: http://www.ers.usda.gov/media/1156726/err152.pdf

Teammate Brainstorm Recording Sheet

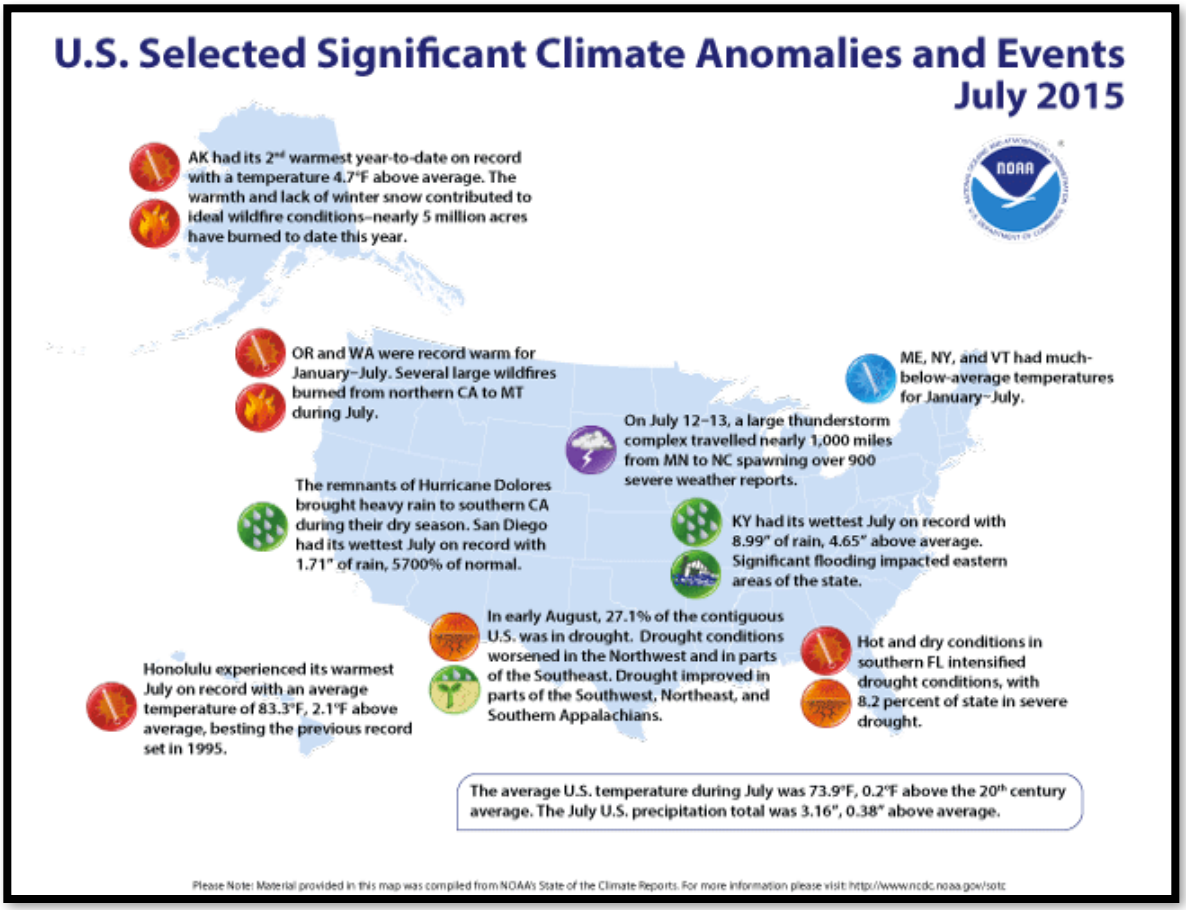
Risks	
I shared….	**My teammate shared…**
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
Rewards	

I shared….	My teammate shared…
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Weather Card Sort

Rainy Season	Heavy rains at the start of planting season delay crops. Runoff contamination can occur with storm water, sewage and drainage infrastructure.
Frequent Floods	Could lead to loss of topsoil. It can damage crops and prevent oxygen from getting to plants. Living plant tissues, including roots, needs oxygen to make high-energy compounds.
Heat Wave	Can greatly accelerated the ripening of fruits and then dehydrate them. Leads to poor soil quality, wind and water erosion of soils, and more wildfires.
Long Cold Season	Constant cool and constant dampness from precipitation can lead to poor establishment of roots.

Examples of Extreme Weather Events



Source: https://www.ncdc.noaa.gov/sotc/national/201506

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

Modern Farming – Careers and Crops

Companion Activity for "The Industry of Farming"

Activity Summary:
Modern farming employs millions of Americans, but they do not all work in professions historically associated with agriculture. Today, many agricultural careers require specific fields of science, such as chemistry, biology, or food science. In this activity, students will investigate the variety of science-related careers in farming and their contributions to the agricultural industry. They will also examine different technologies used in farming and consider the implications of those technologies on emerging careers.

Materials
Note: All ancillary materials are provided at the end of this document.
- List of science-related farming careers (display or distribute)
- Computers or smartphones with Internet access
- Farming Career Research Notes handout
- Exit Slip

Procedure:
1. Group students into teams of two or three. Display the list of science-related farming careers below and ask teams to select a career to research (or assign careers to teams if they are unable to choose). Note that the list below is not exhaustive, so add other careers as needed.

2. Distribute **Farming Career Research Notes** handout. Allow time for students to research their chosen (or assigned) career, filling in as much information about the profession as possible.

3. Students create a presentation board about the science-related farming profession they researched. Presentations should include the information they gathered during their research (and any other interesting information they would like to add. Presentation options include physical display boards that can be placed around the room or digital (e.g., PowerPoint) or online presentations displayed at stations. Free online options include (but are not limited to Prezi, Google Slides, Keynote for iCloud, or Haiku Deck.)

4. Students visit each other's presentations to learn about science-related farming careers. This can be done in a gallery walk or in a larger school career expo. After the event, close the activity by asking students to discuss those careers that most interest them.

Science-Related Careers in Farming

- Geneticist
- Biologist
- Horticulturist
- Veterinarian
- Irrigation Engineer
- Food Engineer
- Crop Specialist
- Soil Scientist
- Livestock Production Management
- Animal Scientist
- Quality Assurance Expert
- Food Chemist Meat Scientist
- Research Director
- Research Scientist
- Environmental Director
- Registered Dietitian
- Public Health Administration

Farming Career Research Notes

Name: _____ Date: _____ Class Period: ___

Career:	
Describe the major roles and responsibilities of people in this profession. What do they do?	
What type of education or degree is required? What do they have to know and be able to do?	
Identify one or two Schools/Colleges/ Universities that offer degrees in this field.	
What is the salary range for this career?	
What technologies do people use in this profession?	
How does this career support the farming or ranching industries?	

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

Challenges in Farming and Ranching

Lesson Summary:
Students will brainstorm the challenges farmers and ranchers face. Students will use a graphic organizer to capture their thinking around some of the main types of challenges: weather, growing conditions (e.g., insects and weeds), and market prices. Students will consider the impact of those challenges on the availability of food and the financial well-being of farmers and ranchers as well as the ways in which new technology can enhance their practices. Students will also explore programs and projects that help farmers and ranchers overcome challenges around connecting with a broader community around food.

Target Audience: Grades 9-12

Lesson Duration: One class period (45-60 minutes)

Essential Questions:
- What challenges do modern farmers and ranchers face?
- What happens to food availability and prices if weather has a negative impact on harvest or on farming and ranching operations?
- What happens to farmers and ranchers if grain and livestock market prices are lower than expected?
- How can technology assist farmers and ranchers in meeting their goals in order to be successful?

Objectives:
Students will:
- Analyze the impact of weather and fluctuating markets on food production and availability and on profitability
- Generate ideas on how changing technology impacts farms, ranches, and farmers and ranchers
- Research programs that connect farmers and ranchers with the community through information, learning projects, assistance, or food

Standards:
C3 Framework Standards for Social Studies:
- **D4.6.9-12:** Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.
- **D2.Geo.12.9-12:** Evaluate the consequences of human-made and natural catastrophes on global trade, politics, and human migration.

Agriculture, Food and Natural Resources (AFNR) Cluster: Agribusiness Systems Pathway Knowledge and Skill Statements:
- **AGC03.01:** Access and utilize suitable resources to identify and study public policies, issues and regulations impacting AFNR management.
- **AGC10.04:** Envision emerging technology and globalization and project its influence on widespread markets to demonstrate an understanding of technologies and trends that will impact the AFNR industry.

Materials
Note: All ancillary materials are provided at the end of this document.

- *Farmland* video segments
  - **Segment 1: Challenges in Farming and Ranching:** *This clip examines two main challenges in farming and ranching – weather and markets. Students build understanding of how farmers and ranchers try to deal with challenges over which they have no control.*
  - **Segment 2: Farmers' Markets**: *This clip further analyzes how the markets have an impact on the farmer and his or her business decisions. Examples of buying and selling or planning in a down market or with unknown market prices are shown.*
  - **Segment 3: Sustainability on the Farm**: *This clip demonstrates how the farm uses its own crop for feed for the hogs and uses the hog manure to fertilize the crops to grow the feed.*
  - **Segment 4: Sustainability is Important**: *This clip explains the importance of sustainability in order to be successful farmers and ranchers.*
  - **Segment 5: Harvest**: *This clip explores the use of technology to help bring in the crop and finish a farming season.*
- Graphic Organizer: Challenges of Farming and Ranching
- Exit Slip

Procedure:

1. As a whole group, have students brainstorm challenges they face in their daily lives. List students' ideas on the board or overhead projector.
   Responses might include the following: Managing work and school, managing homework, learning and understanding new material in classes, taking care of sick family members, taking care of younger siblings, finding a job, needing money for school clothes, working with teammates

2. Explain that today they will be thinking about some of the challenges farmers and ranchers face as they work to produce food. Have students use their prior knowledge to identify some challenges they think farmers and ranchers might face in their daily lives. List these in a separate column on the board or overhead projector.
   Responses might include the following: Finding workers/helpers, managing money, caring for animals, working around bad weather, balancing work and home life, selling their crops or livestock for a profit, implementing new systems, saving money with sustainable practices

3. Ask students to compare the two lists and identify items that are similar. Circle or draw lines to connect items they identify as similar. Have students create categories for the challenges they identified as similar. For example, taking care of younger siblings and caring for animals could fall into the same category, which could be "Supervising." Responses will vary.

4. Distribute the Graphic Organizer: Challenges of Farming and Ranching and prepare to show Video Segments 1-5. As students watch each video segment, have them note details that identify or explain farming and ranching challenges related to weather (Column 1) and challenges related to the markets and profitability (Column 2). Ask students to note additional challenges facing farmers and ranchers and make note of ways they try to mitigate those challenges. If necessary, students can use the back of their graphic organizers.
   Responses might include the following:
   - *<u>Weather</u>: Late season snow, too cold to plant, not enough rain, working all night in good conditions, costs money to irrigate crops, seed selections and prices subject to weather*
   - *<u>Markets</u>: Don't know final sale price when planting, market and demand at sale time sets prices, prices can fluctuate 25% in two weeks, have to sell when animals or crops are ready and cannot wait for prices to go up, spending money all season before knowing sales price*
   - *<u>Additional Challenges</u>: Public perception of farmers and ranchers and the way farms and ranches work, predicting new food trends*
   - *<u>Mitigation</u>: Irrigation systems, raising prices, selling shares to consumers in exchange for harvested crops, sustainability practices, such as growing feed for animals and fertilizing with manure*

5. Have student groups discuss their notes and report their findings to the whole group.

6. Next, have students identify which statement below they agree with the most and provide three pieces of evidence from the video segments (or personal experience) to support their selections.

   - Statement A: The weather is the biggest challenge faced by farmers and ranchers.
   - Statement B: The grain and livestock market is the biggest challenge faced by farmers and ranchers.

7. Arrange students in pairs or groups so that there is a mix of people who selected Statement A and people who selected Statement B. Have Statement A students share the evidence that supports their selection. Then have Statement B students share the evidence that supports their selection. Provide a few minutes for students to try to persuade the "opposing" side to change their thinking (the more evidence they have, the better!).

   Responses might include the following:

   Weather: Weather is the most important challenge facing farmers and ranchers.
   - *If there is no rain, farmers may face reductions in crop yields, loss of crops, or replanting of crops. Ranchers may face downsizing of herds.*
   - *A hurricane, tornado, or flood can immediately wipe out a crop or destroy farms and ranches, causing farmers and ranchers to go out of business.*
   - *If the weather is bad during planting or harvesting, farmers and ranchers could lose crops. If this happens over a widespread area, prices for food could go up.*

   Markets: The markets are the biggest challenge for farmers and ranchers.
   - *If farmers and ranchers have to buy seeds and materials when the prices are high, they will not make as much money when they sell their crops.*
   - *If farmers and ranchers have to sell when the markets are low, they will lose money.*
   - *If farmers and ranchers lose too much money, they may go out of business.*

8. Next, have students identify technologies farmers and ranchers could use to help them alleviate the challenges they just discussed. Encourage students to include evidence from the video segments. Have students brainstorm new technologies that could help farmers and ranchers alleviate challenges. If time allows, have students research existing technologies used by modern farmers and ranchers.

   Responses might include the following:
   - *Weather: More advanced weather forecasting with alerts for severe weather and information about longer forecasts, 24-hour availability of news and weather*
   - *Markets: New technologies to calculate trends in pricing, so farmers and ranchers can try to time their buying and selling, smartphones and laptops for ease of access to information*

Assessment:
Have students complete an Exit Slip before they leave to help them summarize their learning and comprehension of the lesson. Review the Exit slips to gauge students' understanding of the main concepts of the lesson.

Graphic Organizer: Challenges of Farming and Ranching

_____ Name: _____ Date: _____ Class Period: _____

Use this table to complete the activities as directed.

Challenges Related to Weather	Challenges Related to Markets and Profitability

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

Farmers and Ranchers in the Community

Companion Activity for "Challenges in Farming and Ranching"

Activity Summary:
Students will work in teams to research programs or projects run or supported by farmers and ranchers that provide information, learning projects assistance, food, or other services to the community. Students will identify local programs or projects in other towns, cities, or counties. Students will be challenged to consider ways they can learn more about farming and ranching and support farmers and ranchers in their efforts to share their expertise with a broader community.

Materials:
Note: All ancillary materials are provided at the end of this document.

- *Farmland* video segments
  - **Segment 6: Connecting on a Field Trip:** *This clip shows young students visiting a local farm on a field trip.*
  - **Segment 7: Connecting at a Farmer's Market:** *This clip shows a farmer helping customers at a farm market.*
  - **Segment 8: Connecting at a Community Meal:** *This clip shows a farmer serving a community meal.*
- Computers with Internet access
- Farmers and Ranchers in the Community Exit Slip

Offline Option: Provide handouts from sites relevant to your local area (such as the following optional resources):

- Locations and information on living history farms around the country: http://www.alhfam.org/?cat_id=403&nav_tree=390,403
- Lists living history farms: http://www.lhf.org/en/memberships/outdoor_history_museums/
- 4-H website with information on finding local programs: http://www.4-h.org/?gclid=CLHW_fLBzcgCFYgTHwodH54HKA
- Future Farmers of America website with educational programming and local opportunities: https://www.ffa.org/home
- Searchable list of farmers markets nationwide: http://www.ams.usda.gov/local-food-directories/farmersmarkets
- Information about farmers markets and CSAs (Community Supported Agriculture groups that sell shares in their crops and products and bring it from farm to community): http://www.localharvest.org/

Procedure:

1. Show students Video Segments 6, 7, and 8. Explain that, just like the farmers and ranchers in the clips (and many of the rest of us), many farmers and ranchers like to connect with and give back to their communities.

2. Share the following list with the class of some ways farmers and ranchers connect with or provide services to their communities:
   - Teaching: Some farmers and ranchers teach people in their communities about growing their own vegetables or fruits or raising chickens.
   - Donating equipment: Some farmers and ranchers donate their older or rarely-used tractors and other equipment to local organizations.
   - Field trips: Some farmers and ranchers invite school groups and others to visit their farms and ranches to learn about how farming and ranching work.
   - Donating food: Some farmers and ranchers donate foods that are edible but not salable to food banks and other organizations.
   - Mentoring: Some farmers and ranchers mentor young or new farmers or ranchers to help them become successful.
   - Farmers Markets: When farmers and ranchers bring fresh products into the community for sale, they provide a source of reasonably-priced, quality food for their customers along with a connection to the source of the products.
   - CSAs: Community Supported Agriculture. Farmers bring their food to the community by marketing shares that are purchased in exchange for fresh produce that is provided on a regular basis.

3. Have students add other ways farmers and ranchers may support their communities and explain why these efforts are important.

   Responses may include the following: Farmers and ranchers who are involved in their communities are less likely to be stereotyped. Leftover foods should be used and not thrown away. Farmers and ranchers have a wealth of knowledge about the land and resources in the area that can be useful for others trying to raise their own foods.

4. Have students work in small groups to research community organizations that connect farmers and ranchers with their communities. If necessary, widen the geographic search area to the wider state or national community.
   Some ideas and examples:
   - *Living history farms*
   - *Farmers' markets with demonstrations and/or education*
   - *Farm or ranch tours*
   - *Local 4-H and FFA programs*

5. Each group will create a public service announcement (PSA) about the program it chooses. The PSA could be a video or a "radio" spot with no video. The PSA should include the following information:
   - The name of the community organization, program, or project
   - The name of the farmer or rancher who supports the organization (if applicable)
   - A few details about the support/service provided and for whom it is provided
   - A message explaining how the viewer could get involved by supporting or expanding the program or project
   - Appropriate pictures and/or music in keeping with the message.

6. Each group should present their PSA to the class, explain what the organization does, and provide details about how the farmer or rancher supports that work.

Assessment:
Students should fill out the Farmers and Ranchers in the Community Exit Slip before leaving. Use the slips to evaluate students' learning and determine how students think they might apply what they learned to their own lives.

Farmers and Ranchers in the Community Exit Slip

Name: _____ Date: _____ Class Period: ___

What could you do with the information you learned in this lesson?

_____
_____
_____
_____
_____
_____

Why is it important to know this information?

_____
_____
_____
_____
_____
_____

What would you do differently if you had to change your PSA?

_____
_____
_____
_____
_____
_____
_____

Modern Farmers and Ranchers: Breaking Down Stereotypes

Lesson Summary:
Using strategies such as mind mapping, questioning, and group discussions, students will explore common stereotypes around farmers and ranchers. Students will view segments of the documentary "Farmland," and compare traditional views of farmers and ranchers with real-world modern examples. Students use a graphic organizer[1] to list information to help them build understanding around the Essential Questions. Students will be challenged to consider their own stereotypes around farmers and ranchers and discuss how their thinking has changed as a result of viewing and discussing the video segments.

Target Audience: Grades 9-12

Lesson Duration: One class period (45-60 minutes)

Essential Questions:
- What are some common stereotypes around farmers and ranchers?
- How has your thinking about modern farmers and ranchers shifted?
- What are different roles that professionals play in modern farming and ranching?

Objectives:
Students will:
- Evaluate and deconstruct stereotypes about farmers and ranchers
- Synthesize information to create a description of modern-day farmer/ranchers
- Identify potential careers associated with farming or ranching

Standards:
C3 Framework Standards for Social Studies[2]:
- **D2.His.5.9-12:** Analyze how historical contexts shaped and continue to shape people's perspectives.
- **D2.Psy.9.9-12:** Describe biological, psychological, and sociocultural factors that influence individuals' cognition, perception, and behavior.

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[1] A graphic organizer is a tool that uses symbols and text to illustrate ideas, thoughts, and concepts and the relationships between them. Graphic organizers can help users build understanding of concepts, connect thoughts and ideas, and increase their awareness of their own thinking processes. Additionally, graphic organizers can be used as planning tools for independent or group projects. Graphic organizers come in a wide range of formats, including tables, Venn diagrams, concept webs, and tree diagrams.

[2] *College, Career, and Civic Life Framework for Social Studies State Standards:*
The result of a three year state-led collaborative effort, the College, Career, and Civic Life (C3) Framework for Social Studies State Standards was developed to serve two audiences: for states to upgrade their state social studies standards and for practitioners — local school districts, schools, teachers and curriculum writers — to strengthen their social studies programs. Its objectives are to: a) enhance the rigor of the social studies disciplines; b) build critical thinking, problem solving, and participatory skills to become engaged citizens; and c) align academic programs to the Common Core State Standards for English Language Arts and Literacy in History/Social Studies. Source: http://www.socialstudies.org/c3

Agriculture, Food and Natural Resources (AFNR) Cluster: Agribusiness Systems Pathway Knowledge and Skill Statements[3]:

- **AGC09.02:** Select, research, and examine critical aspects of career opportunities in one or more AFNR career pathways in order to gain an understanding of the breadth of occupations within this cluster.
- **AGC10.03:** Compare and contrast issues affecting the AFNR industry including biotechnology, employment, safety, environmental and animal welfare to demonstrate an understanding of the trends and issues important to careers in this industry.

Materials

Note: All ancillary materials are provided at the end of this document.

- *Farmland* video segments
  - **Segment 1: Challenging Preconceived Notions**: *This clip challenges viewers' preconceived notions about farmers and ranchers and the work they do. It examines what it takes to be a successful farmer or rancher and highlights the importance of farms and ranches to the nation's food supply.*
  - **Segment 2: Breaking Down Stereotypes**: *This clip shows the work farmers and ranchers do. It demonstrates farmers and ranchers out on the job while talking about their work. It also reveals the importance of farming and ranching to the families and to the larger communities.*
- Definition of "stereotype" (Online option located at http://www.merriam-webster.com/dictionary/stereotype)
- Graphic Organizer: Modern Farmers and Ranchers: Breaking Down Stereotypes
- Mind Map Activity handout
- 3-2-1 Exit Slip
- Optional Resources:
  - United States Department of Agriculture 2012 Census of Agriculture: http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_US/usv1.pdf

Procedure:

1. What percentage of the U.S. workforce do you think is owns and/or works on farms and ranches? (Share data.) Do you think that percentage has increased or decreased over the last fifty years or so? (Share data.) Why do you think that is? Ask students how many of them have ever been to a farm or ranch. Allow students to discuss their experiences. Ask students to describe what comes to mind when they think of farmers and ranchers. List students' descriptions so that the whole group can see (e.g., on a chalkboard, overhead projector, or chart paper). (See *Optional Resources.*)

2. Share a definition of the word "stereotype" to establish a common understanding of the term.

3. Have students work in small groups to discuss the descriptions they provided and identify those that could be considered stereotypes of farmers or ranchers. Have groups share and highlight their conclusions. Ask students if they have ever heard of other stereotypes around farmers and ranchers and add their contributions to the list.
   Possible responses might include the following: Wear overalls, wear straw hats or cowboy hats, have a red barn, own scraggly dog, passed from fathers to sons, listen only to country music, have a southern accent, ride horses, do not have college degrees, only interested in farming or ranching, cruel to animals, drive a pickup truck

4. Ask students how stereotypes around farming and ranching might be contributing to the number of people leaving those professions (or choosing not to go into them).

5. Distribute the Graphic Organizer: Modern Farmers and Ranchers: Breaking Down Stereotypes. Have students list some of the stereotypes they identified in column 1.

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[3] *Agriculture, Food and Natural Resources Cluster: Agribusiness Systems Pathway Knowledge and Skill Statements*
These knowledge and skill statements were developed by the National Association of State Directors of Career Technical Education Consortium (NASDCTEc). This Career Cluster focuses on the production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources. See more at: http://www.careertech.org/Agriculture#sthash.ArmJmoLj.dpuf

6. Guide students in a discussion around the following questions:

    - Why do you think people might have stereotypes like these about farmers and ranchers? Why might our sources of information lead us to make false assumptions about farmers and ranchers?
        - *Possible responses might include the following: TV shows and movies, more people live in urban areas and are unfamiliar with actual farms and ranches, news stories show more negative information than positive images*
    - What are the dangers of stereotypes?
        - *Possible responses might include the following: keep you from learning about other people and places, keep you from meeting new people, keep you from possible job opportunities*

7. Show Video Segment 1. As students view the video, have them record in Column 2 people, places, images, and ideas that contradict or debunk the stereotypes from the first part of the lesson.
Responses might include the following: Farmers and ranchers with college degrees, young men and women, sustainable practices, modern homes and conveniences, varied interests, different kinds/ sizes of farms (family farms, factory farms), entrepreneurial spirit, and modern technologies and equipment

8. Have students work in small groups to compare and discuss their findings. Encourage students to listen to the ideas of others and expand their notes during the group discussion. Have students make connections between the columns in their notes. They might physically draw lines connecting ideas, draw arrows, or use other methods to show how evidence in Column 2 contradicts or debunks ideas in Column 1.

9. Distribute the Mind Map Activity handout and have students work in groups to use what they have learned and discussed to add details around the themes below to build a Mind Map about farmers and ranchers.

    Themes to Explore:
    - Education
        - *Possible responses: College degree, on-the-job training, business courses, animal care, equipment, technology*
    - Lifestyle
        - *Possible responses: Modern or newer homes, pools, drive trucks and cars, like to go shopping, enjoy spending time with friends and family, use electronic devices, have days off, have helpers, responsible for a wide range of duties and tasks, need to know about many areas of business, are hard workers, are happy with their choices and enjoy life, manage business details, run and maintain equipment, use modern technologies to accomplish traditional farming tasks, are entrepreneurial and motivated to succeed, utilize sustainable practices, seasonal work (may work longer hours during busy season with no or few days off or breaks, work with family members)*
    - Personal Attributes
        - *Possible responses: Young, educated, hard-working, family oriented, concerned about providing excellent products, clean, well-mannered, have an entrepreneurial spirit, care about the crops they grow or animals they raise, are thoughtful about the impact of their work*

10. Show Video Segment 2. As students view the video, have them add new information and ideas to their Mind Maps.

11. Using the information from the lesson, including the graphic organizer and Mind Map, ask students to work in groups to create a description of modern farmers and ranchers. They can include information around the themes above and any other themes they want to add.
Responses might include the following: Many of today's farmers and ranchers are college educated, live in modern houses with modern appliances and technology, and need many skills to run the farms. Some of today's farmers and ranchers are young and modern. They enjoy many of the activities that people in other communities enjoy. They are knowledgeable about the many business aspects of running a profitable farm operation. Some farmers and ranchers do not begin with a family farm, but

are entrepreneurial and start their own operations. Farmers and ranchers are invested in their communities and attend worship services and schools, provide jobs, and participate in local government.

12. Have each group share their descriptions with the whole class. Ask students to discuss the similarities and differences in their definitions and identify anything that surprised them. Finally, ask students to explain how the video segments and their discussions changed their thinking about farmers and ranchers and why that change might be important in their lives.

Assessment:
Have students complete a 3-2-1 Exit Slip on their way out. This will help students summarize their learning and comprehension of the lesson. Teachers can review the students' 3-2-1 Exit Slips and determine if there are any questions that need to be addressed. Teachers can also use them to determine areas of student interest for further study.

Graphic Organizer: Modern Farmers and Ranchers: Breaking Down Stereotypes

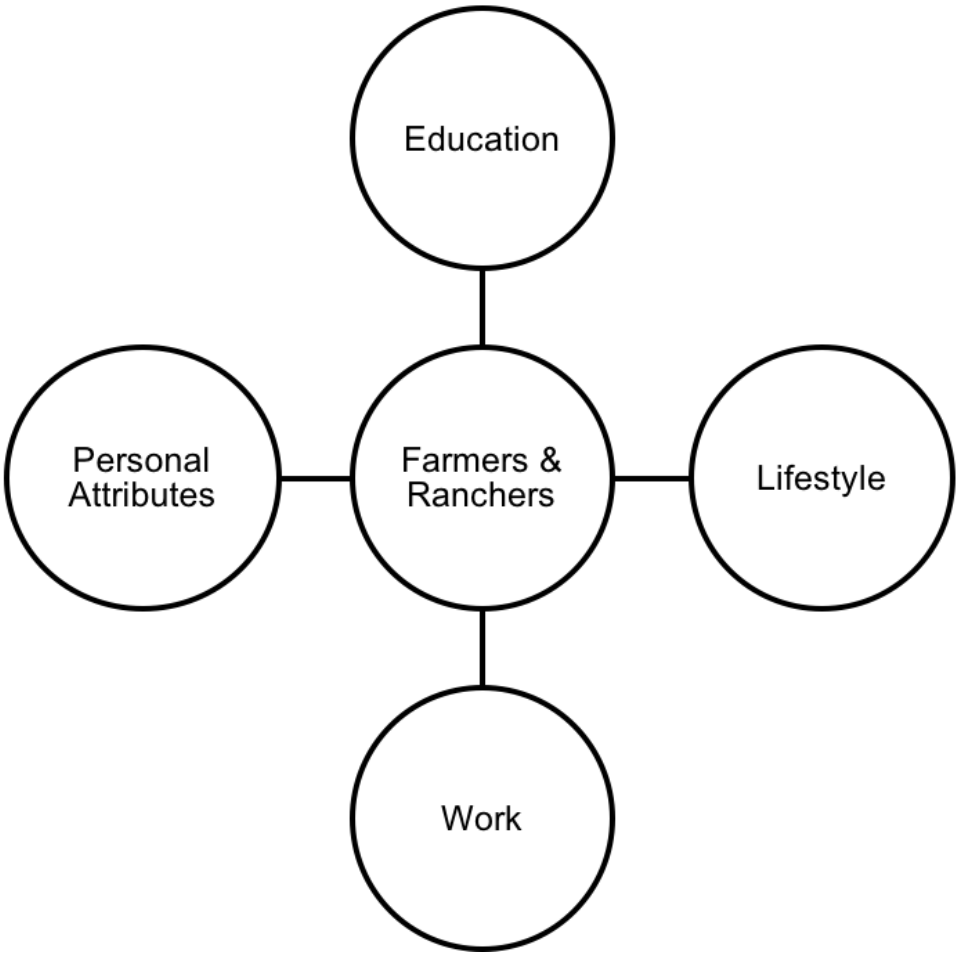
Name: _____ Date: _____ Class Period: _____

Use this chart to complete the activities as directed.

Current Stereotypes on Farmers and Ranchers Column 1	New Perspective on Farmers and Ranchers (Images and Knowledge that Debunk Stereotypes) Column 2

Mind Map Activity

Name: _____ Date: _____ Class Period: ___



3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

Professional Careers in Farming and Ranching

Companion Activity for "Modern Farmers and Ranchers: Breaking Down Stereotypes"

Activity Summary:
Working in small groups, students will continue to challenge their previous ideas about farming and ranching by researching and discussing professions associated with modern farming and ranching, such as horticulturalist, livestock or hatchery manager, large animal or poultry veterinarian, business manager, mechanic, geneticist, biologist, toxicologist, engineers, chemist, agronomists, economists, or sales/ marketing agent.

Materials
Note: All ancillary materials are provided at the end of this document.

- *Farmland* video segments
  - Segment 1: **Challenging Preconceived Notions**
    - (Timecode: 1:08-9:36)
- *This clip challenges viewers' preconceived notions about farmers and ranchers and the work they do. It examines what it takes to be a successful farmer or rancher and highlights the importance of farms and ranches to the nation's food supply.*
  - Segment 2: **Breaking Down Stereotypes**
    - (Timecode: 38:17-42:37)
- *This clip shows the work farmers and ranchers do. It demonstrates farmers and ranchers out on the job while talking about their work. It also reveals the importance of farming and ranching to the families and to the larger communities.*
- Presentation Table
- Presentation Rubric
- Exit Slip
- Computers with Internet access
  - Offline Option: Provide handouts from sites (such as the following optional resources) for students to use as a reference:
    - Links to job descriptions: http://study.com/article_directory/q_p/page/Agriculture/q_p/Careers_and_Occupations_List.html
    - Comprehensive list of different types of careers in the industry: http://jobs.lovetoknow.com/career-fields/list-agriculture-careers
    - Information about how to prepare for career, salary information, and more: http://www.environmentalscience.org/careers/agriculture-and-forestry

Procedure:

1. Show again the video segments from the lesson. This time, have students make note of any professions or professional roles associated with modern farming and ranching. After they have viewed the video segments, ask students to brainstorm additional professions they think are associated with modern farming and ranching. Guide students' thinking by asking them to think of all of the aspects of farming and ranching they have observed.

   Responses might include the following: horticulturalist, livestock or hatchery manager, large animal or poultry veterinarian, business manager, mechanic, sales/marketing agent, truck driver, handyman, researcher, buyer/seller, inspector, project manager

2. Have students work in groups to research information about a selected profession (Option: Assign groups a profession so a variety is addressed). Students should look for information about the following:
   - Education/training needed
   - Pay and benefits
   - Skills required
   - Part-time/full-time hours worked
   - Working conditions
   - Availability of jobs
   - Continuing education requirements

3. Have students work in their groups to prepare a one minute presentation on the profession they researched. The presentation should explain what the job entails as well as the details listed above.

4. As students view their classmates' presentations, have them fill out the Presentation Chart. They should list the job title, any interesting or important facts about the job, and then circle "YES," "MAYBE," or "NO" as to whether this profession interests him or her.

Assessment:
During group presentations, use the rubric included with this lesson to measure a group's understanding of a farming profession. Students should fill out the Farming and Ranching Professions Exit Slip and submit before leaving. Review the slips to determine if students have any additional questions about professions in farming and ranching and to decide if students might want to work together to learn more about possible career paths.

Presentation Table

Name: _____ Date: _____ Class Period: ___

Directions: During the presentations, fill in the table below.

Job Title	Interesting/Important Facts	Does this job interest you?
		YES MAYBE NO
		YES MAYBE NO
		YES MAYBE NO
		YES MAYBE NO
		YES MAYBE NO
		YES MAYBE NO
		YES MAYBE NO
		YES MAYBE NO

Presentation Rubric

Name: _____ Date: _____ Class Period: _____

During the presentation your teacher will use this rubric to determine your understanding of the profession you chose as well as how well you followed directions for this activity. Fill out the "Student Evaluation" column of the rubric and hand this to the teacher as you as you begin your presentation.

Farming Profession Chosen:		
Topic	**Student Evaluation**	**Teacher Evaluation**
Education/training needed	Included? YES NO Comment:	Included? YES NO Comment:
Pay and benefits	Included? YES NO Comment:	Included? YES NO Comment:
Skills required	Included? YES NO Comment:	Included? YES NO Comment:
Part-time/full-time hours worked	Included? YES NO Comment:	Included? YES NO Comment:
Working conditions	Included? YES NO Comment:	Included? YES NO Comment:
Availability of jobs	Included? YES NO Comment:	Included? YES NO Comment:
Continuing education requirements	Included? YES NO Comment:	Included? YES NO Comment:
Additional details	Included? YES NO Comment:	Included? YES NO Comment:
Presentation style	30 to 45 seconds: YES NO Comment:	30 to 45 seconds: YES NO Comment:
	30 to 45 seconds: YES NO Comment:	30 to 45 seconds: YES NO Comment:

Farming and Ranching Professions Exit Slip

Name: _____ Date: _____ Class Period: ___

Using the information from your presentation notes, fill in this form to give to the teacher at the end of the lesson.

Profession that interests me the most:

_____

Explain how or why this profession interests you.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Farming and Ranching Professions Exit Slip

Name: _____ Date: _____ Class Period: ___

Using the information from your presentation notes, fill in this form to give to the teacher at the end of the lesson.

Profession that interests me the most:

_____

Explain how or why this profession interests you.

_____

_____

_____

_____

_____

_____

_____

_____

CULTIVATING CONVERSATIONS

DISCOVERING FARMLAND

ABOUT FOOD & AGRICULTURE

Educated Consumers

Lesson Plan

Lesson Summary:
In this lesson, students will investigate case studies that highlight media influence of agricultural demand and the impact on farmers and ranchers. Students will establish a common understanding of the term "trend" to examine how foods become popular and who decides this, if anyone, and how different groups of people respond. Students will view the video segment and identify agricultural trends discussed in the clip. They will discuss other current food trends (e.g., crops and farming-related activities) they are aware of. They will brainstorm possible reasons for trends in farming and ranching and identify potential areas of misinformation or misunderstanding. Examples of crops and animal-derived products might include blueberries, kale, corn, soybeans, tomatoes, millet, peas, grass-fed meats, poultry, and animal-derived fats. Examples of farming-related activities might include organics, antibiotics, hormones, and GMOs. Students will explore how consumers can be influenced by marketing and advertising versus scientific data.

Lesson Duration: One class period (45-60 minutes)

Essential Questions:
- What pressures do farmers/ranchers face to increase yields to meet demands?
- How do farmers determine which crops or products they will develop?
- How do marketing and media that highlight specific products impact farmers and ranchers?
- How do marketing and media influence consumer behaviors?

Learning Objectives:
Students will:
- Explain the impact of consumer demand on the supply and prices of certain foods.
- Explain the effect of food supply and prices on nutrition, health, and the economy.
- Develop an action plan for predicting and preparing for a future food trend.
- Brainstorm strategies for educating consumers to support trends around food.

Standards
Next Generation Science Standards:
- **HS-ESS3-1:** Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

Agriculture, Food and Natural Resources Cluster: Agribusiness Systems Pathway Knowledge and Skill Statements:
- **AGC10.04:** Envision emerging technology and globalization and project its influence on widespread markets to demonstrate an understanding of technologies and trends that will impact the AFNR industry.
- **AGC08.01:** Demonstrate workplace ethics specific to AFNR occupations in order to reflect effective stewardship of resources.

Materials
Note: *All ancillary materials are provided at the end of this document.*
- *Farmland* video segments
    - **Video Segment #1: The Roots of Your Food:** *This clip discusses varieties of crops, emerging crops, and the influence of the general public on what farmers grow. It also*

addresses how public opinion influences marketing and how consumers can be more educated about what they purchase.
    - **Video Segment #2: The use of GMOs:** *This clip discusses the use of GMOs to decrease the use of pesticides*
- Consider the Source handout
- Noting Food Trends handout
- Trend Research handout
- Action Plan Blueprint handout

Vocabulary
- **Trend:** (n.) A general direction in which something is developing or changing; a fashion. (v.) To change or develop in a general direction. (Source: Oxforddictionaries.com)
- **GMO:** Genetically-modified organism. Often used to describe organisms developed using the tools of genetic engineering. In plants, GMOs commercially available include corn (field and sweet), soybeans, sugar beets, cotton, alfalfa, papaya, squash, canola and potatoes. Farmers choose to use GM seeds to reduce crop damage from weeds, diseases and insects, as well as from extreme weather conditions, such as drought. (Source: GMO Answers Glossary)

BACKGROUND FOR TEACHER
This lesson emphasizes the influences and trends that influence consumers. The lesson focuses on specific trends in agricultural production and marketing of food products. In particular, market trends that may arise from new technologies or media reports can often affect producers through increased or decreased demand. A trend in consumer preferences, which may or may not be scientifically justified, can then influence agricultural production. For example, according to USDA data, broccoli production dipped in 1990 after President H. W. Bush announced that he did not like broccoli. If students struggle with the concept of a trend, lead them to a common understanding that a trend is anything growing in fashion or favor at the time. Part of students' understanding should be the awareness that trends evolve and change over time.

Part of this lesson's focus on understanding trends is their basis in fact or fad. With today's mass communication, a mere one percent of people committing to a choice contrary to the mainstream can create trends that influence the choices of the rest of society (Frazier, 2007). The Internet has made it even easier for messages from marketing firms and media outlets to reach consumers and influence their behavior, especially around making purchasing decisions. Clarify with students that clever advertising and marketing around products, even our food, can be misleading. We should make decisions based on evidence when reading through different claims we are exposed to in our daily lives. Explain to students that they will be looking for marketing and media claims around some agricultural products or technologies and considering the impact of those trends on farmers and ranchers. In particular, farmers and ranchers need to be able to identify potential trends so they can prepare for consumer demand and be flexible in their response to new trends in food and agricultural technologies.

For example, the anti-GMO trend may not be based on scientific information. It is likely that students have heard of GMOs, and perhaps have negative preconceptions. However, students may not understand the meaning of the term genetically-modified organism (GMOs) or the scientific basis for their production and use. Clarify that the FDA defines a GMO as a plant or animal that has been genetically modified through the addition of a small amount of genetic material from other organisms through molecular techniques. GMOs in production today have genetic traits to provide protection from pests, tolerance to pesticides, or to increase yields and improve product quality.

The aim of this lesson is to empower students with the knowledge, methods, and awareness to research claims about food and agriculture. Consumer decisions about food purchases are often made based on inadequate or even misleading information. By understanding media influences and food trends, students will be better equipped to research relevant information. Such information in turn helps them to make healthy choices based on scientific facts rather than the latest fads or trends.

Procedure:
ENGAGE

1. Ask students to write in their notebook an example of something that is “trendy”, such as a new fashion, performer, or hairstyle.

2. Write the word “trend” on the board and ask students to share with a partner their understanding of the term.

3. Briefly check students’ understanding by asking them to use the word “trend” in a written sentence that gives examples of a trend in fashion, technology, or entertainment. Guide the class to understand the definition of the word (see *Vocabulary*).

4. Explain to students that today they will be exploring food-related trends and the impact of trends on farmers and ranchers.

EXPLORE

1. Students work in small groups to identify trends they have seen around food. Each group creates a list of trends related to food. Allow groups to share their lists, and create a class list with all the food-related trends identified by students.

2. Still working in groups students, describe *how* they know the foods they identified are increasing or decreasing in popularity with consumers. If necessary, ask a guiding question such as “Where did you hear about a particular food, eat it, or learn about its popularity?” Record students’ responses, which might include television shows or movies, magazine articles, commercials, cooking shows, family gatherings, or friends.

3. Ask students to think about what made them decide to eat the “trendy” foods, especially if they had never tried them before. Student record their responses for specific foods.

4. Groups brainstorm the reasons for trends in food. Guide the discussion to help students identify the reasons, as needed, which could include:
   - Pop culture (e.g., using popular movies or TV shows to advertise a product)
   - Health benefit claims (e.g., improves eyesight; makes your heart strong)
   - Strategic marketing (e.g., repackaging unpopular items to raise interest and increase appeal. Pork belly was cut into rounds and also sold pre-cooked to make it easy for fast food and restaurants to sell.)
   - Cultural influences (e.g., Japanese influence of sushi; Swedish tradition of coffee breaks in the afternoon)
   - Celebrity endorsement (e.g., celebrities claim to use products or are used in print orTV advertising)
   - Energy demand (e.g., claims for use as biofuels, more efficient production)

5. Students work in their groups to read and discuss one article that provides a perspective on marketing, media, and food trends. The Resources section provides some articles as examples, but other articles may be substituted. Some groups may read the same article. Students should record their notes on the **Consider the Source** handout.

EXPLAIN

1. Groups create a short presentation in a format they choose (skit, slideshow, poster, etc.) to explain how marketing and media can influence food trends. If necessary, ask guiding questions such as “Why is it important to know where food trends come from?” and “How do marketing and media influence consumer behaviors?” Allow time for students to think and share their ideas with a partner.

2. Each group presents its conclusions about the influence of marketing and media on food trends.

ELABORATE

1. Tell students they're going to hear from actual farmers and ranchers about food trends and see how they impact the decisions they make, the crops they grow, and their profitability. Play **Video Segment 1**. As students watch, they take notes on the **Noting Food Trends** handout.

2. Students discuss their thoughts and questions about the segment. Ask questions to guide students' thinking, particularly around the questions on the handout. Students should reflect on the information each group shared from the articles they read as well as examples from the video.

3. Explain that sometimes trends are related to the kinds of foods farmers and ranchers produce. Other times, trends are related to how they produce those foods. Play **Video Segment 2** and have students continue to take notes on the **Noting Food Trends** handout.

4. Students discuss their thoughts and questions about the segment. Ask questions to guide students' thinking, particularly around the questions on the handout.

5. Students work in groups to research recent marketing and media claims around one of the agricultural products, technologies, or food purchasing trends below. Students can use the **Trend Research** handout to guide and document their research.

- To help focus students on particular agricultural products, provide a list of various crops and animal products.
  - Possible crops: Blueberries, Kale, Corn, Soybeans, Tomatoes, Millet, Peas
  - Possible animal products: Grass-fed meats, Poultry, Animal-derived fats
- Help students focus on specific farming-related technologies by providing a list.
  - Agricultural technologies: Organics, Antibiotics, Hormones, Genetically-modified organisms (GMOs)
- Help students focus on specific food purchasing trends by providing a list.
  - Buying local
  - Membership in Community Supported Agriculture (CSAs)

6. Students work in teams to develop an action plan for predicting a future food-related trend. When developing their plans, students should consider what they have learned and discussed about how trends are initiated and expanded. Action plans should include all components in the **Action Plan Blueprint** handout.

EVALUATE

1. After groups have completed their research, they share their action plan with the whole class. Ensure group presentations demonstrate understanding that farmers and ranchers are directly affected by agricultural trends.

2. Allow peer-review critique of each group's plan and evaluate accordingly.

Resources:

- Frazier, M. (2007). Spotting a 'microtrend'? Easier than you might think. *AdAge.com*. Retrieved from http://adage.com/article/ad-and-marketing-book-reviews/spotting-a-microtrend-easier/122743/
- Food Trends Influence Consumer Purchasing Patterns (optional)
- 2015 Top 10 Food Trends (from the Food Channel) (optional)
- The Influence of Media on Our Food Choices (optional)
- Media Influences Food Trends, Appeals to Students (optional)
- TV Dinners in a Netflix World (optional)

Consider the Source

Based on the article your group read, what are some ways marketing and media influence food-related trends and consumer purchasing behaviors?
What strategies are used to make foods more appealing to consumers? Give an example of where such strategies created a food trend.
How can consumers recognize bias in marketing and media messages? Why is it important that they do so?
How do food-related trends affect the work of farmers and ranchers?

Food Trends Note Taking Sheet

***Farmland* Segment 1**

What are some of the crops discussed in the segment?
How does public opinion influence marketing and media? How do marketing and media influence public opinion?
How might consumers better educate themselves to make informed decisions about the foods they purchase?

Food Trends Note Taking Sheet

***Farmland* Segment 2**

What were the different perspectives of the farmers on GMOs?
What are two reasons for use of GMOs in agriculture?
What larger food-related issues are scientists and farmers trying to solve by employing GMO technology?
How does the use of GMOs help consumers?
Can you identify opposing perspectives on GMOs among consumers? How do they influence purchasing patterns?

Trend Research

With your group, research recent marketing and media claims around one of the agricultural products or technologies below. Use this sheet to guide and document your research. Use the back of this page, if necessary.

Agricultural Product or Technology:

_____

Source	Claim

Action Plan Blueprint

Imagine you are a farmer or rancher. You are making decisions about the foods you will produce next year, but are not sure what food-related trends will be popular then. Develop an Action Plan for identifying upcoming trends. As you develop your plan, consider what you have learned about how trends are established.

What are some current food trends?
Why are they popular (i.e., celebrity use, nutritional value, cooking shows, etc.)?
What are some ways trends are communicated and expanded?
What media sources can I check to see if there are any emerging food-related trends?
What Internet sources can I consult?

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

CULTIVATING CONVERSATIONS

DISCOVERING FARMLAND

ABOUT FOOD & AGRICULTURE

Food Terms and Marketing

Companion Activity for "Educated Consumers"

Activity Summary:
In this activity, students will compare different food labels and discuss what different labels are telling consumers about a product. They will examine the information and build their understanding of the relationship between marketing and popular food terms. In particular students will focus on determining whether label information is scientifically verifiable or potentially misleading. Students will discuss strategies for making informed decisions about food.

Materials:
- Various food labels (at least one label per small group)
  Note: There are several options for gathering food labels for this activity, including asking students to bring in various food containers or labels, conducting an Internet search for a range of food labels and printing them out, or asking school staff members to save labels and contribute to collection.
- Resources (for definitions and additional information)
- 3-2-1 Exit Slip

Procedure:
1. Ask students to list any terms they see on their food labels (or have seen in the past or heard in commercials related to food). If necessary, provide an example, such as "Organic." Record the terms so all students can see. Common terms seen on food labels include the following (see Resources for various definitions of these terms):

   - Organic
   - 100% Organic
   - Made with Organic Ingredients
   - Non-GMO
   - No Antibiotics/Antibiotic-Free
   - Hormone-Free
   - All Natural
   - Raised
   - No Sugar Added
   - Sugar Free
   - Zero Trans Fats
   - Fat Free
   - Light (or Lite)
   - Gluten-free
   - Sustainably

2. Ask guiding questions to lead a class discussion about the term, such as the following:
   - Do you know what these terms mean?
   - How can you be sure?
   - Who is responsible for putting these terms on food labels? Is it the manufacturer? The federal government? A marketing agency? What is the difference between these kinds of labels?
   - Why would a manufacturer or its marketing agency want to put certain labels on foods?
   - Why would the federal government want to put certain labels on foods?
   - How might food labels and trends be connected?
   - Where could you look for scientific evidence to back up the claims made on food labels?

3. Students work in small groups to investigate a food label term to learn the following:
   - What does this term mean?
   - Who is responsible for placing this term on a food label?
   - Are there any rules or restrictions around using this term?
   - What should consumers know about this term before purchasing this food item?

4. Have small groups report their findings and ask, “How will this new information affect your decision making when selecting and purchasing food in the future?

5. Have students complete a 3-2-1 Exit Slip. This will help students summarize their learning and comprehension of the lesson. Review the students’ 3-2-1 Exit Slips and determine if there are any questions that need to be addressed and identify areas of student interest for further study.

Resources:

- United States Department of Agriculture: Food Labeling Fact Sheets
- Health: 16 Most Misleading Food Labels
- Tufts University Office of Sustainability: Decoding Food Labels
- CUESA Glossary

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

3-2-1 Exit Slip

Name: _____ Date: _____ Class Period: ___

3	Things I learned today:
2	Things I found interesting:
1	Question I still have:

The Farmland activities were taken from National Association of Agricultural Educators website and were created by Henry Paris, Arlee Blaker, and Laura Bidne.

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Name: _____ Date: _____ Class Period: 1 2 3 4 5 6

"Farmland" Video Response

Writing Prompt

Date Due: _____

Most Americans have never stepped foot on a farm or ranch or even talked to the people who grow or raise the food we eat. The documentary "Farmland" takes an intimate look into the lives of farmers or ranchers in their 20s, all of whom are now responsible for running their farming business.

Subjects in the film include:

1.) **Leighton Cooley** – A fourth generation poultry farmer, operates four farms in Georgia with his father. In addition to chickens, he also has a cow-calf operation and grows hay. Leighton and his wife have two sons.
2.) **Brad Bellah** – A sixth generation cattle rancher, runs beef cattle operations in Texas and Colorado, including a natural beef herd. The 26-year-old husband and father of a twin son and daughter earned a bachelor's degree in agricultural communications from Texas Tech University.
3.) **David Loberg** – A fifth generation corn and soybean farmer in Nebraska, runs the family farm with his mother. The farm also custom feed 500 head of cows for a local dairy operation and runs an irrigation business. The 25-year-old and his wife have an infant son.
4.) **Sutton Morgan** – A fourth generation farmer from California, grows, packs, and sells onions and potatoes, and also grows melons, carrots, broccoli, cauliflower, lettuces, chard, kale, and alfalfa. Sutton holds a degree in Business Economics from the University of California, Santa Barbara.
5.) **Margaret Schlass** – A first-generation certified Naturally Grown vegetable farmer who grows and markets her farms' produce through a CSA (Community Supported Agriculture) membership program, as well as the Pittsburgh Farmers Market and to restaurant owners. Margaret earned a Bachelor of Arts degree in Art History and Anthropology from the University of Delaware before embarking on her farming career.
6.) **Ryan Veldhuizen** – A fourth generation farmer, is taking over the operation of his family's hog farm in Minnesota with his brother and sister. The farm grows hogs, corn and soybeans, which they use for feed.

Following the viewing of the documentary "Farmland", write a 1-2 page essay describing the operation of three of the farmers highlighted in the film. You will find the outline which you should follow below and the grading rubric on the back.

This essay must be **typed**, using the following format:

1 inch margins
12 point font
Times New Roman, Cambria, Calibri, or Arial
Single Spaced (1 space between paragraphs)
Name, Date, Class Period, & Teacher – 1st page, left hand corner

Please use the following outline:

I. Introduction
II. Subject #1
    A. What is the focus of this farmer's operation?
    B. What struggles do they have to overcome?
    C. What is unique or interesting about this farmer or his/her operation?
III. Subject #2
    A. What is the focus of this farmer's operation?
    B. What struggles do they have to overcome?
    C. What is unique or interesting about this farmer or his/her operation?
IV. Subject #3
    A. What is the focus of this farmer's operation?
    B. What struggles do they have to overcome?
    C. What is unique or interesting about this farmer or his/her operation?
V. Conclusion
    A. What did you learn from this video?

Grading Rubric

	Excellent – 4 Pts	Good – 3 Pts	Fair – 2 Pts	Poor – 1 Pt
Introduction	Very well developed introduction & thesis statement. They engage the reader and create interest. They contain and/or introduce the process and state the author's point about the process. They also cover the whole process.	The introduction & thesis statement create interest and are fairly well developed. But while they contain and/or introduce the process, they are not very engaging; although, they do cover the whole process.	The introduction & thesis statement introduce the process, but they either do not give accurate and complete information, or they lack detail and creativity. May not cover the whole process.	The introduction & thesis statement do not introduce the process. No controlling point about the process is evident.
Body Paragraphs	Each paragraph contains a clearly focused topic sentence that relates to the process being described. Details in the essay are clear and specific, and there are enough details to help the reader see and understand all the steps of process. Concrete sense language is used effectively.	Each paragraph contains a topic sentence that relates to the process being described. Details are clear and specific, and the steps in the process can be followed well enough to understand the described process.	Not all paragraphs contain topic sentences that relate to the process being described. There are details, but they are not very clear or specific, or there are not enough of them to allow the reader to follow the progression of the process.	There are no apparent topic sentences. Details are either wrong or lacking. They do not seem to relate to the process.
Conclusion	The concluding paragraph effectively unifies the essay. It makes a point about the process that is creative and interesting.	The concluding paragraph effectively unifies the essay, but it does not make a very interesting point about the process.	The concluding paragraph relates a conclusion to the process, but it does little to unify the essay around the steps of the process.	There is no apparent conclusion or point made about the process.
Organization & Structure	Logical progression of details with a clear structure that enhances the essay and provides a clear step-by-step description of the process. The transitions are appropriate and used very effectively to indicate the time order of the steps.	Logical progression of details. Transitions are present, but they do not enhance the overall effectiveness of the essay. All steps are covered and in the correct order.	Organization is clear. Some transitions are present, while others are either inappropriate or missing. Some steps may be missing or not in the proper order.	No discernible organization. Transitions are not present. Cannot discern a logical explanation of the process.
Spelling & Grammar	Spelling and grammar is generally correct.	Some spelling and/or grammatical errors.	Several spelling and/or grammatical errors.	Many spelling and/or grammatical errors.
Effort	The student followed all of the directions. The students put more effort into the project than what was required.	The student followed most of the directions. The students put good effort to this assignment.	The student followed some of the directions. More effort was needed to have a better finish for this product.	The students failed to follow directions. The students put minimal to no effort into their work.

Was your essay typed? (2pts) Yes No

Did you follow the formatting instructions for typing your essay (font type, font size, etc.)? (2 Pts) Yes No

Did you print your essay? (2pts) Yes No

Was your essay turned in on time? (2pts) Yes No

Grade: _____/30pts

Comments:

Name: _____ Points: _____

Farmland

-The Evolution of a Tradition -

Most Americans have never stepped foot on a farm or ranch or even talked to the people who grow and raise the food we eat. Farmland will take an intimate look at the lives of farmers and ranchers in their '20s, all of whom are now responsible for running their farming business.

- *Brad Bellah, a sixth-generation Texas cattle rancher*
- *Leighton Cooley, a fourth-generation Georgia poultry farmer*
- *David Loberg, a fifth-generation Nebraska corn and soybean farmer*
- *Sutton Morgan, a fourth-generation California organic produce farmer*
- *Margaret Schlass, a first-generation Pennsylvania vegetable farmer*
- *Ryan Veldhuizen, a fourth-generation Minnesota hog farmer*

Through this film from award-winning director, James Moll, you'll step inside the world of farming for a first-hand glimpse into the lives of young farmers and ranchers. Learn about their high-risk/high-reward jobs and passion for a way of life that has been passed down from generation to generation, yet continues to evolve.

Questions:

1. 90% of food in America comes from what?

2. What is the main factor/contributor to having a successful farm?

3. Brad Bellah - the cattle rancher from Texas - talked about the size of their operation, but that it is still family operated and run. What did he say is the most important thing he does each day?

4. Ever since the depression the number of farms and the number of farmers has steadily decreased. Why has this happened and what has happened as a result?

5. One of the farmers mentioned that it is a blessing to be able to have a family farm to return home too. What were his reasons for this?

Name: _____ Points: _____

6. All of the farmers discussed at one point why first generation farming is such a challenge. What are two of the reasons they gave?

7. Often time people underestimate the challenges of farming. One reason is that you have to buy seeds (input) a year in advance and that is without knowing what?

8. The phrase "assests get trapped" was used in the movie. What does that mean?

9. David Loberg – the farmer from Nebraska - talked about the year there was snow through most of April. That really affects when they are able to get the seed into the ground. What is the ideal temperature trend for planting corn?

10. Farm vs. Business – while farming is a business, why did one of the farmers mention that he really prefers to use the term farm?

11. How does rain – too much or too little – in the Midwest affect the farmers in Texas?

12. The market price can fluctuate quite a bit within a few weeks, but when cattle are ready the ranchers do not have the luxury of waiting. Why?

13. Just as we have choices as consumers, farmers also have choices for seed. What are some things they consider?

14. Did you notice in the scene with the people in the tractors that they aren't physically driving those tractors. How does that work?

Name: _____ Points: _____

15. What is the biggest hurdle farmers face today?

16. David Loberg – the Nebraska corn and soybean farmer – said that if you don't want to eat GMO products, that is your choice, but don't do what?

17. GMO seed provides a better defense against what? This also cuts down on the use of what?

18. The farm always comes _____. This is something many feel the general public does not understand unless they came from a farm.

19. In the discussion about Hormone Free Birds. This is really about what?

20. What did they feel the government needs to do a better job explaining?

21. What does using antibiotics "medicinally" mean?

22. What is the best way for farmers to get their story out?

23. How do farmers learn about their animals and their health?

24. Why is it is so easy to publicize the "bad apples" of farming?

25. They shared the statistic that 80% of the land is owned by people 65 and older. Why does it become challenging to pass that land on to others?

26. Why do you really need to have a passion for farming if you are going to choose that as your life's path?

Name: _____ Points: _____

27. The ending song was “This Land is Your Land”. What is the significance of this song?

28. In your opinion which of the farmers faces the most challenges and why do you think that?

29. What was the biggest eye opener for you in this movie?

30. What do you think is the biggest misconception the general public has about farmers?

Farmland

-The Evolution of a Tradition -

Most Americans have never stepped foot on a farm or ranch or even talked to the people who grow and raise the food we eat. Farmland will take an intimate look at the lives of farmers and ranchers in their '20s, all of whom are now responsible for running their farming business.

- *Brad Bellah, a sixth-generation Texas cattle rancher*
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Through this film from award-winning director, James Moll, you'll step inside the world of farming for a first-hand glimpse into the lives of young farmers and ranchers. Learn about their high-risk/high-reward jobs and passion for a way of life that has been passed down from generation to generation, yet continues to evolve.

Questions:

1. 90% of food in America comes from what?
   Family Farm

2. What is the main factor/contributor to having a successful farm?
   The environment – specifically the ground needs to be in good condition

3. The cattle rancher from Texas talked about the size of their operation, but that it is still family operated and run. What did he say is the most important thing he does each day?
   Check the cattle and take care of their health

4. Ever since the depression the number of farms and the number of farmers has steadily decreased. Why has this happened and what has happened as a result?
   Fewer and fewer people go into production agriculture so farms have consolidated making the average farm size much larger than it use to be.

5. One of the farmers mentioned that it is a blessing to be able to have a family farm to return home too. What were his reasons for this?
   The start up cost is so large that it makes it almost impossible to just decide to start farming.

6. All of the farmers discussed at one point why first generation farming is such a challenge. What are two of the reasons they gave?
Price of land and infrastructure costs as well (equipment, seed, etc.)

7. Often time people underestimate the challenges of farming. One reason is that you have to buy seeds (input) a year in advance and that is without knowing what?
The price you will receive for the product.

8. The phrase "assests get trapped" was used in the movie. What does that mean?
In farming the largest percentage of expenses are out front/at the beginning – they must be incurred without having any idea what the market price will be. Farmers have good years, but must save for the bad years because they will happen too.

9. One of the families talked about the year there was snow through most of April. That really affects when they are able to get the seed into the ground. What is the ideal temperature trend for planting corn?
50 degrees and rising.

10. Farm vs. Business – while farming is a business, why did one of the farmers mention that he really prefers to use the term farm?
Using the term farming or family farm has more of a personal touch too it. It is a business and must be run like a business, but there is a lot more that goes into it – the deep love and commitment that farmers and ranchers have to their land and their animals.

11. How does rain – too much or too little – in the Midwest affect the farmers in Texas?
The majority of the corn that ranchers feed their chickens and their cattle comes from the Midwest. When the corn price is high is will affect the input cost of raising cattle and in turn the overall profit.

12. The market price can fluctuate quite a bit within a few weeks, but when cattle are ready the ranchers do not have the luxury of waiting. Why?
When cattle are ready they might have a 1-2 week window at most, but then must get them sold regardless of what the market price is currently.

13. Just as we have choices as consumers, farmers also have choices for seed. What are some things they consider?
The soil and the characteristics of the soil, growing season, consumer

wants

14. Did you notice in the scene with the people in the tractors that they aren't physically driving those tractors. How does that work?
GPS

15. What is the biggest hurdle farmers face today?
Public perception and social media issues.

16. David Loberg – the Nebraska corn and soybean farmer – said that if you don't want to eat GMO products, that is your choice, but don't do what?
He talked about organic being a viable option because it is a choice that consumers have. But, he asked that people not vilify what other farmers are doing.

17. GMO seed provides a better defense against what? This also cuts down on the use of what?
Insects and other pests. It cuts down on the use of chemicals.

18. The farm always comes _FIRST_. This is something many feel the general public does not understand unless they came from a farm.

19. In the discussion about Hormone Free Birds. This is really about what?
All the poultry they were raising was hormone free, but someone got smart and decided to advertise that their birds were which led to the misconception that all others had hormones in them.

20. What did they feel the government needs to do a better job explaining?
Explaining what organic and all-natural really mean.

21. What does using antibiotics "medicinally" mean?
Only using antibiotics when an animal is sick – just as you would for people. In some operations if an animal receives antibiotics they then are moved to a different herd because they are no longer all natural.

22. What is the best way for farmers to get their story out?
Telling people and showing people.

23. How do farmers learn about their animals and their health?
The best way to learn is by watching and observing.

24. Why is it is so easy to publicize the "bad apples" of farming?
Technology and social media makes it very simple to send the message

that “all” are the same as the one bad story.

25. They shared the statistic that 80% of the land is owned by people 65 and older. Why does it become challenging to pass that land on to others?
The taxes needed to pay on the land are very high.

26. Why do you really need to have a passion for farming if you are going to choose that as your life’s path?
It is emotionally and physically hard.

27. The ending song was “This Land is Your Land”. What is the significance of this song?

28. In your opinion which of the farmers faces the most challenges and why do you think that?

29. What was the biggest eye opener for you in this movie?

30. What do you think is the biggest misconception the general public has about farmers?