

SPRING 2016 Teaching Guide



In this guide, you will find several activities that accompany articles from the **Spring 2016 issue of FFA New Horizons**. Additionally, the purpose of the first page is to showcase ways in which agriculture educators can enhance literacy and technology integration within the agricultural education classroom.

CONTENT WITHIN THIS GUIDE IS ALIGNED WITH THE FOLLOWING:

- FFA Precepts
- Agriculture Food and Natural Resources (AFNR)
- Common Career Technical Core
- National Association of State Directors of Career Technical Education Consortium (NASDCTEC)
- Common Core-Reading: Informational Text
- Common Core-Writing
- Common Core-Language
- Common Core-Speaking and Listening
- Common Core-Science and Technical Subjects
- Common Core-Literacy in Science and Technical Subjects: Writing
- Common Core-History/Social Studies
- Common Core-Math Practices
- Common Core-Math (Specific)
- Next Generation Science Standards (NextGen)
- Green/Sustainability/Knowledge and Skill Statements
- National Standards for Financial Literacy
- AFNR Career Ready Practices
- Partnership for 21st Century Skills (P21 Skills)
- Career Pathways

SCHOLARS SAY...

A compiled list of discipline-specific or academic vocabulary found throughout this issue of FFA New Horizons:

Accomplishment	Eminent domain	Occurrence
Auctioneer	Eradicate	Perpetuation
Cloning	Estate tax	Precedence
Combat	Etiquette	Proximity
Commemorating	Fluorescent	Restoration
Commission	Grapple	Ritual
Complexity	Gregarious	Salable
Crystallized	Hue	Scheme
Designated	Integrity	Stewards
Embeds	Mammograms	Succession

VOCABULARY ACTIVITY:

Create vocabulary concept cubes to help students learn the definition of a word, synonyms, antonyms, characteristics and examples of it in use on a paper cube. For further details, check out Idea #3 "Concept Cubes" available [here](#).

STANDARDS COVERED:

L.9-10.4, L.11.12.4

Determine or clarify the meaning of unknown and multiple-meaning words and phrases.

L.9-10.6, L.11-12.6

Acquire and use accurately a range of general academic and domain-specific words and phrases.

FINANCIAL LITERACY TIP:

According to the American Institute of CPAs, "It is never too early to learn smart financial habits." According to the National Standards for Financial Literacy, students should be able to describe the difference between saving and financial investing. To help students with this, give them a specific amount of "money" that represents their first paycheck. Have some students put their "money" in a standard savings account while other students should invest in a financial opportunity of your choosing. Over the course of a couple of months have students track how the initial amount of money has changed.

COMMON CORE TIP:

"The bulk of writing assignments should be multi-paragraph compositions such as reports and essays, rather than personal essays, memoirs or narratives." (ASCD InService) In each unit, have students write two-page reports on a topic that was discussed during the unit. This will help students develop the ability to expand on concepts discussed in class and will challenge them to make connections they might not make if they only write one or two paragraphs.

#SPEAKAG SOCIAL MEDIA TIP:

Use social media to thank sponsors and supporters for their contributions to the success of the FFA chapter. Associating their brand with pictures and stories of successful student leaders will provide them visibility and encourage continued support. Have students share the post to boost impact in a variety of audiences. Coming Soon: More social media advocacy tips and best practices [here](#).

"WE ARE FFA" DIVERSITY AND INCLUSION TIP:

"The type of classroom environment that a teacher creates and encourages can either increase or decrease a student's ability to learn and feel comfortable as a member of the class. The classroom environment should do as much to foster cooperation and acceptance as the teaching methods that the teacher uses." (Bucholz & Sheffler, 2009)

Allow students to answer the following questions and display the answers for all to see so that students can appreciate the diversity of their classmates through inclusiveness (for the sake of time, have them answer one question per day or week):

1. When I grow up I want to be...
2. An FFA member is...
3. The FFA family is...
4. I include others by...
5. My idea of diversity is...
6. I speak up for agriculture by...

REFERENCES:

American Institute of CPAs. "Life Stages Tips: Tweens & Teens." 360 Degrees of Financial Literacy. Retrieved from <http://www.360financialliteracy.org/Life-Stages/Tweens-Teens>.

ASCD InService. Guest Blogger. Seven Tips for Aligning Assignments to Common Core. (2012, August 8). Retrieved from <http://inservice.ascd.org/seven-tips-for-aligning-assignments-to-common-core/>.

EBI Network. University of Missouri. "20 Vocabulary Lesson Ideas." Retrieved from <http://ebi.missouri.edu/wp-content/uploads/2012/10/Vocabulary-Lesson-Classroom-Ideas.pdf>.

Council for Economic Education. National Standards for Financial Literacy. Retrieved from <http://www.councilforeconed.org/resource/national-standards-for-financial-literacy/>.

APPENDICES:

- 1 A Little Bit CAN Make A BIG Difference
- 2 Kidding Around Crossword
- 2 KEY Kidding Around Crossword
- 3 It's the Goat Life
- 3 RUBRIC It's the Goat Life
- 4 Flavor Creator
- 5 Food Is My Work



ARTICLE SUMMARY:

Gimme' Five

The Norco FFA Chapter in California has a capstone project that each senior FFA member must complete. It is the \$5 Challenge, which has been conducted for the past eight years. Each senior is given a \$5 bill and they have four months to find a need in the community

and help meet that need using the money. Students can work alone or as a group. Last year, around 40 students turned \$210 into \$1,200 that was donated to various organizations.

DISCUSSION QUESTIONS:

- 1 Would a \$5 Challenge work at our school? Why or why not?
- 2 How have the students made such a big difference with such a small amount of money?
- 3 What could you achieve with \$5?

ACTIVITY:

Activity #1: After reading the article, students will use the worksheet "A Little Bit CAN Make A BIG Difference" (Appendix 1) to brainstorm ideas for how they can make a difference with \$5 and for similar projects they could do with their agricultural education program, FFA chapter or school. *No Internet access is needed to complete this activity.*

FFA TIP:

Use this article and activity to get FFA members motivated about community service. Have students share their ideas and at the next chapter meeting have members vote on three ideas that they would like to do for a chapter community service project. Let the members take the lead in conducting these projects.

SAE TIP:

For those students who are not interested in the "traditional" supervised agricultural experiences, (SAEs) have them develop a project to support an agricultural cause or organization they support. This could be hosting a 5K run and donating the funds to the local animal hospital or they could host a community "Hunger Banquet" to help community members understand the challenges of food insecurity.

STANDARDS ALIGNMENT:

FFA Precept

FFA.PL-A.Action: Assume responsibility and take the necessary steps to achieve the desired results.

FFA.PL-F.Continuous Improvement: Accept responsibility for learning and personal growth.

Common Core-Reading: Informational Text

CCSS.ELA-LITERACY.RI.9-10.2 Determine a central idea of a text.

CCSS.ELA-LITERACY.RI.9-10.4 Determine the meaning of words and phrases.

Common Core- Writing

CCSS.ELA-LITERACY.W.9-10.4 Produce clear and coherent writing.

CCSS.ELA-LITERACY.W.9-10.5 Develop and strengthen writing as needed.

CCSS.ELA-LITERACY.W.9-12.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Common Core- Speaking and Listening

CCSS.ELA-LITERACY.SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions.

Common Core- Language

CCSS.ELA-LITERACY.L.9-10.6 Acquire and use accurately general academic and domain-specific words and phrases.

Common Core- Math Practices

CCSS.MP1 Make sense of problems and persevere in solving them.

CCSS.MP2 Reason abstractly and quantitatively.

CCSS.MP7 Look for and make use of structure.

AFNR Career Ready Practices

CRP.02. Apply appropriate academic and technical skills.

CRP.04. Communicate clearly, effectively, and with reason.

CRP.05. Consider the environmental, social and economic impact of decisions.

CRP.06. Demonstrate creativity and innovation.

CRP.08. Utilize critical thinking to make sense of problems and persevere in solving them.

VOCABULARY:

Capstone
Impressive
Incorporated
Tweaked

FFA PRECEPT:

Premier Leadership

RELATABLE BOOKS, MOVIES AND LINKS:

Ted Talk: One Person Can Make A Difference: Shawna Coronado:
<https://youtu.be/vGzBcBZrOSw>

RELATABLE ARTICLES:

50 Community Service Ideas for Teen Volunteers <https://www.teenlife.com/blogs/50-community-service-ideas-teen-volunteers>

Tips on Starting a Community Service Project <http://www.adlit.org/article/32255/>

APPENDICES:

Appendix 1 – A Little Bit CAN Make A BIG Difference

Name: _____

A Little Bit CAN Make a BIG Difference

Directions: Read the article “Gimme’ Five” in *FFA New Horizons*. Complete this worksheet to help you brainstorm how you could do something similar in your school and community.



How can you use me to make a difference in your community?

- _____
- _____
- _____

That \$5 Challenge is a pretty neat idea. What are some projects my ag ed program and FFA chapter could do?











Appendix 1

Aligned to the following standards:

FFA.PL-A.; FFA.PL-F; CCSS.RI.9-10.2; CCSS.RI.9-10.4; CCSS.W.9-10.4; CCSS.W.9-10.5; CCSS.W.9-10.9; CCSS.SL.9-10.1; CCSS.L.9-10.6; MP1; MP2; MP7; CRP.02; CRP.04; CRP.05; CRP.06; CRP.08; CRP.09



Two Norco FFA members attended the 2015 National FFA Convention & Expo to present their \$5 Challenge project as part of the National Model of Innovation Chapter Awards.

PHOTOGRAPHY BY Frank Ordoñez



GIMME' FIVE

California FFA chapter challenges seniors to make their community better with \$5

Could you make a positive impact on your community with just \$5? That's the question agriculture teacher

Robin Grundmeyer asked senior FFA members at Norco High School in California when she started the school's \$5 Challenge eight years ago.

The \$5 Challenge is now an annual tradition for the senior class, and students look forward to it all through high school.

"I wanted to create a capstone senior project that involves service, supply and demand, and needs versus wants," Grundmeyer says. "I had read online about a teacher doing a similar class project, so I tweaked it to incorporate community service."

NORCO FFA \$5 CHALLENGE

Every January, Grundmeyer gives each senior FFA member the project rules and requirements with a \$5 bill stapled to it. They have until April to complete the challenge either alone or in a group, and they are required to give a presentation to a panel of judges about what they did with the money. Winners receive gift cards.

"The judges are school administrators, city council members and people from our community," Grundmeyer says. "That helps get the word out about the project."

Students often team up in groups of four or five. They can also ask for help from community members

and local businesses.

"One year, some students put on a carnival in our school parking lot, and they donated all the money they raised to the local animal shelter," Grundmeyer says. "Kids have sold carnations at school to support the Children's Hospital of Orange County. One student made and sold hair bows to support the Wounded Warrior Project. A lot of kids get additional donations, and one girl donated her money to the Susan G. Komen Breast Cancer Foundation in memory of her aunt."

The possibilities are endless, and the results have been impressive. In 2015, 42 students turned \$210 of seed money into more than \$1,200, which was donated to various

community organizations and charities. They also donated more than 500 hours of their time to the community.

SNOW CONE, ANYONE?

Diane Vavala, a recent graduate of Norco High School, completed the \$5 Challenge in spring 2015.

"We formed a group of 10 students, so we had \$50 to start with," Diane says. "It was really hot outside, so we decided to rent a snow cone machine and sell snow cones for \$1 at lunch. We did it over three days, and we made more than \$300."

The students sold snow cones in several flavors, including blue raspberry, sour apple, cotton candy and bubble gum.

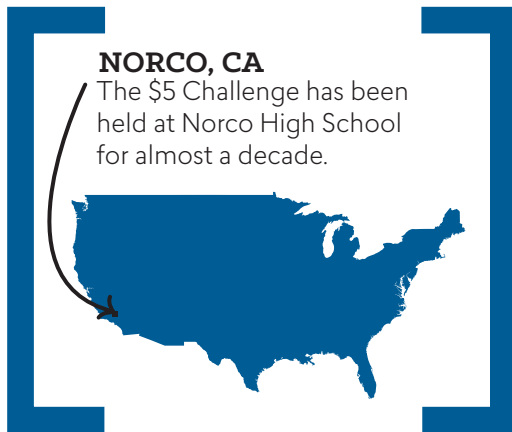
"We had kids lining up to buy them," Diane says. "It was so successful that we rented out

the snow cone machine a second time to see how much more money we could raise."

Diane and her peers donated their profits to the Norco Animal Shelter and even got to visit the shelter

NORCO, CA

The \$5 Challenge has been held at Norco High School for almost a decade.



during one of their lunch periods.

"The \$5 Challenge helped me learn to speak out and not be shy," Diane says. "We made new connections with people from the rental company and at the animal shelter. It was such a fun experience to help our community."

Because of their efforts, Norco FFA was one of 10 chapters from across the U.S. selected as a Model of Innovation finalist in the area of student development at the National FFA Convention & Expo in 2015.

"It has been pretty cool to see the outreach of the project," Grundmeyer says. "There is evidence of the \$5 Challenge all around our department – things current students see that are a result of the challenge. Teenagers often say they can't do this or that. But this project teaches them that they can actually do a lot with \$5."

– Jessica Mozo



MORE ONLINE

To watch a video describing two Norco FFA members' projects, visit FFAnewhorizons.org/NorcoFFA.

ORGANIZATIONS BENEFITED FROM \$5 PROJECT:

WOUNDED WARRIOR PROJECT

www.woundedwarriorproject.com

AMERICAN CANCER SOCIETY

www.cancer.org

NORCO SENIOR CENTER NORCO ANIMAL CONTROL

www.norco.ca.us

NORCO HIGH SCHOOL FARM

www.cnusd.k12.ca.us/nohs

CORONA NORCO RESCUE MISSION

www.inlandempirerescuemission.org





ARTICLE SUMMARY:

Kidding Around

Meat goats are the fastest growing segment of the U.S. livestock industry. Goat meat has risen in popularity so quickly that millions of pounds of meat are imported each week to meet the growing demand. Goat meat is a lean protein source that is lower in calories, saturated fat and cholesterol than beef.

DISCUSSION QUESTIONS:

- 1 Did any information shared in this article surprise you? Why or why not?
- 2 Why do you think goat meat is so popular around the world?
- 3 Why do you think goat meat has not traditionally been as popular as beef, pork and chicken in the U.S.?

ACTIVITY:

Activity #1: Students will use information gleaned from the article to complete the “Kidding Around” (Appendix 2) crossword puzzle. *No Internet access is needed to complete this activity.*

Activity #2: Students (either individually or in small groups) will pick a popular meat goat breed to research and create a poster, brochure, PowerPoint, etc. to share information about the breed using guidelines provided in “It’s the Goat Life” (Appendix 3). A rubric is also provided; provide the students with the rubric in advance to help them determine what level of detail they should provide. *Internet access is needed to complete this activity.*

FFA TIP:

Visit an animal auction or goat meat market as an FFA chapter activity. Students will learn how an animal auction works as well as learn more about the meat goat industry.

SAE TIP:

For students who are interested in raising meat goats but are unsure where to start, get them in touch with your local extension agent or someone who is already in the industry. If students lack the funds to get started, encourage them to apply for an SAE grant available through the National FFA Organization each fall. These \$1,000 grants would be perfect to get a student started in the industry.

VOCABULARY:

Compact
Forages
Hardy
Hearty
Immigrants
Imported
Originated
Predecessors
Primary
Protein
Rigid

CAREER PATHWAY:

Animal Systems

RELATABLE BOOKS, MOVIES AND LINKS:

Meat Goat Education Programs <http://agecon.okstate.edu/meatgoat/>
Goat Breeds <http://www.ansi.okstate.edu/breeds/goats>

Know Your Cuts of Goat https://www.washingtonpost.com/lifestyle/food/know-your-cuts-of-goat/2011/04/04/AFetnBIC_gallery.html

RELATABLE ARTICLES:

An Introduction to Raising Meat Goats <https://www.southernstates.com/articles/raising-meat-goats.aspx>

APPENDICES:

Appendix 2 – Kidding Around Crossword
Appendix 2 KEY – Kidding Around Crossword
Appendix 3 – It’s the Goat Life
Appendix 3 RUBRIC – It’s the Goat Life

STANDARDS ALIGNMENT:

AFNR

AS.06. Classify, evaluate, and select animals based on anatomical and physiological characteristics.

FFA Precept

FFA.PG-J.Mental Growth: Embrace cognitive and intellectual development.

Common Career Technical Core

AG-ANI6 Classify, evaluate, and select animal based on anatomical and physiological characteristics.

Common Core-Reading: Informational Text

CCSS.ELA-Literacy.RI.9-10.1 Cite strong and thorough textual evidence.

Common Core-Speaking and Listening

CCSS.ELA-Literacy.SL.9-10.4 Present information, findings, and supporting evidence.

Common Core-Science and Technical Subjects

CCSS.ELA-Literacy.RST.9-10.9 Compare and contrast findings presented in a text to those from other sources.

Common Core-Math Practices

CCSS.MP6 Attend to precision.

CCSS.MP7 Look for and make use of structure.

AFNR Career Ready Practices

CRP.02. Apply appropriate academic and technical skills.

CRP.07. Employ valid and reliable research strategies.

CRP.08. Utilize critical thinking to make sense of problems and persevere in solving them.

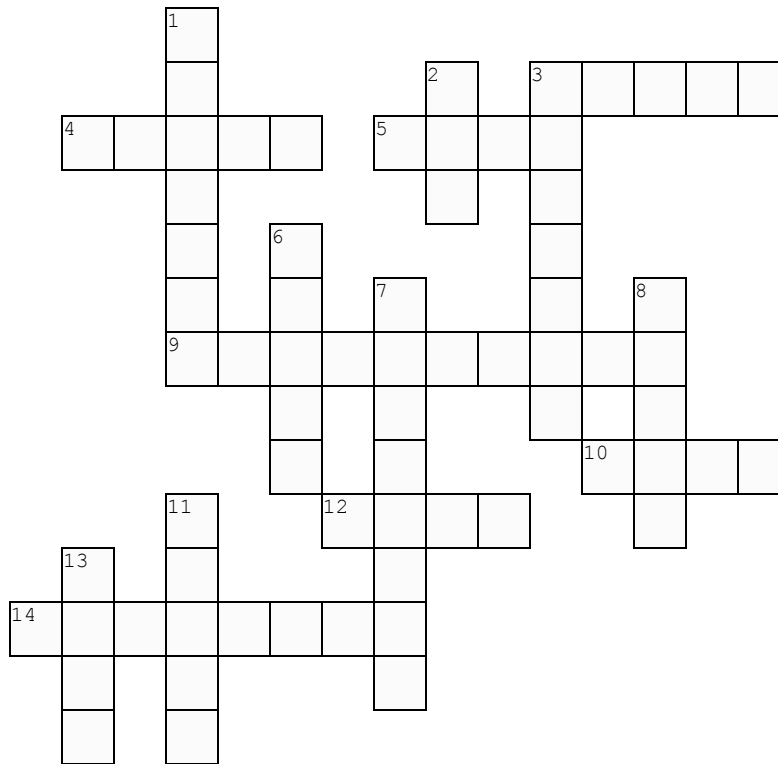
P21 Skills

Critical Thinking and Problem Solving
Information Literacy

Name: _____

Kidding Around

Directions: Complete the crossword puzzle using information available in the *FFA New Horizons* article “Kidding Around?”



Created with TheTeachersCorner.net [Crossword Maker](#)

Down

1. A readily available supply of this feedstuff is needed to raise goats.
2. Goat meat is _____ in saturated fat.
3. Goats are a _____ protein source for many countries.
6. This state has the largest inventory of meat goats.
7. This breed is known for becoming rigid when startled.
8. Goat meat has _____ calories than beef.
11. Goats have 15,000 _____ buds.
13. This breed originated in New Zealand.

Across

3. This goat breed is known for its small size.
4. There are around 450 million goats in the _____.
5. This breed is one of the most popular meat goat breeds.
9. Goat meat makes up _____ percent of all red meat consumed worldwide.
10. 1.5 million pounds of goat meat is imported into the U.S. each _____.
12. The most valuable and most tender cut.
14. This state is one of the top meat goat producing states in the country.

Appendix 2

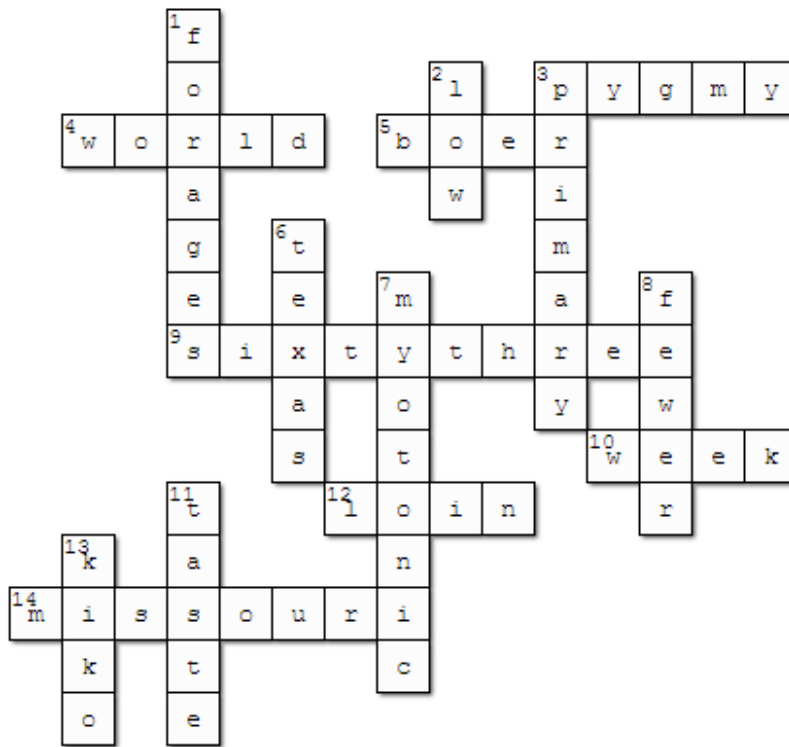
Aligned to the following standards:

AS.06; FFA.PG-J; AG-ANI6; CCSS.RI.9-10.1; CCSS>SL.9-10.4; CCSS.RST.9-10.9; MP6; MP7; CRP.02; CRP.07; CRP.08

Name: _____

KEY: Kidding Around

Directions: Complete the crossword puzzle using information available in the *FFA New Horizons* article “Kidding Around?”



Created with TheTeachersCorner.net [Crossword Maker](http://TheTeachersCorner.net)

Down

1. A readily available supply of this feedstuff is needed to raise goats. **(forages)**
2. Goat meat is _____ in saturated fat. **(low)**
3. Goats are a _____ protein source for many countries. **(primary)**
6. This state has the largest inventory of meat goats. **(texas)**
7. This breed is known for becoming rigid when startled. **(myotonic)**
8. Goat meat has _____ calories than beef. **(fewer)**
11. Goats have 15,000 _____ buds. **(taste)**
13. This breed originated in New Zealand. **(kiko)**

Across

3. This goat breed is known for its small size. **(pygmy)**
4. There are around 450 million goats in the _____. **(world)**
5. This breed is one of the most popular meat goat breeds. **(boer)**
9. Goat meat makes up _____ percent of all red meat consumed worldwide. **(sixtythree)**
10. 1.5 million pounds of goat meat is imported into the U.S. each _____. **(week)**
12. The most valuable and most tender cut. **(loin)**
14. This state is one of the top meat goat producing states in the country. **(missouri)**

Appendix 2

Aligned to the following standards:

AS.06; FFA.PG-J; AG-ANI6; CCSS.RI.9-10.1; CCSS>SL.9-10.4; CCSS.RST.9-10.9; MP6; MP7; CRP.02; CRP.07; CRP.08

Name: _____

It's the Goat Life

Directions: Choose a meat goat breed you want to learn more about. Using information learned through the article “Kidding Around,” your prior knowledge and the Internet, create an educational resource that includes the information outlined below. Be sure to include visual components like graphs and pictures.

Method of Presentation:

- Choose one of the following:
 - Brochure
 - Newsletter
 - Poster
 - PowerPoint/Prezi

Information to Include:

- Breed and breed characteristics
 - Appearance and physical traits
 - Climate/environmental requirements
- Advantages and disadvantages of the breed in regards to meat quality and production
- Facilities for raising goats
 - Land
 - Shelter
 - Fencing
- Nutrition needs
- Marketing Meat Goats
 - Locations where goat meat is in high demand
 - Markets for meat goats
 - Options for selling to “farm to fork” situations, etc.

Suggested Resources:

- <http://extension.psu.edu/business/ag-alternatives/livestock/sheep-and-goats/meat-goat-production#section-2>
- <https://www.southernstates.com/articles/raising-meat-goats.aspx>
- <http://www.ansi.okstate.edu/breeds/goats>

Appendix 3

Aligned to the following standards:

AS.06; FFA.PG-J; AG-ANI6; CCSS.RI.9-10.1; CCSS>SL.9-10.4; CCSS.RST.9-10.9;
MP6; MP7; CRP.02; CRP.07; CRP.08

It's the Goat Life Rubric

Directions: Score the poster/brochure/PowerPoint using this rubric.

Rubric			
Criteria	Below Average (0-7 points)	Average (8-15 points)	Above Average (16-20 points)
Breed Characteristics: appearance, physical traits, climate	Vague or no description provided with little to no explanation of the traits.	Complete description provided, but with incomplete explanation of traits.	Complete description and explanation provided. Pictures included.
Advantages and Disadvantages of Breed	Little to no list of advantages and disadvantages provided.	Complete list of advantages and disadvantages provided, but no explanations.	Complete list of advantages and disadvantages provided, along with explanations.
Facility Requirements	Did not include or information is inaccurate.	Information is accurate, but not comprehensive.	Accurate information and a comprehensive list of facility requirements is provided along with brief explanations/descriptions. Visuals included.
Nutrition Requirements	Did not include or information is inaccurate.	Information is accurate, but lacks detail.	Information is accurate and detail is provided.
Marketing Meat Goats	Did not include or information is inaccurate.	Information is accurate, but only "obvious" options for selling goat meat are provided.	Information is accurate and detailed. It is clear effort was put into learning all possible ways to market meat goats.
Grade			

Appendix 3

Aligned to the following standards:

AS.06; FFA.PG-J; AG-ANI6; CCSS.RI.9-10.1; CCSS>SL.9-10.4; CCSS.RST.9-10.9; MP6; MP7; CRP.02; CRP.07; CRP.08

Kidding Around

Goats serve as the primary protein source for many countries

Although beef and chicken may take center stage on American dinner tables, goat meat makes up a staggering 63 percent of all red meat consumption worldwide.

Goats are the primary protein source in many African, Middle Eastern, Southeast Asian and Caribbean countries.

Meat goats are also the fastest-growing segment of the U.S. livestock industry.

With more and more immigrants bringing their native food traditions to the U.S., the demand for goat's meat is increasing rapidly. To meet the rising demand, approximately 1.5 million pounds of goat meat is imported each week from Australia and New Zealand, in addition to domestic goat production.

Goat's meat is incredibly lean, offering up to 23 grams of protein and only 122 calories per 3 ounces of cooked meat, while beef provides 25 grams of protein and 179 calories. Goat's meat is also low in saturated fat and cholesterol.



15,000

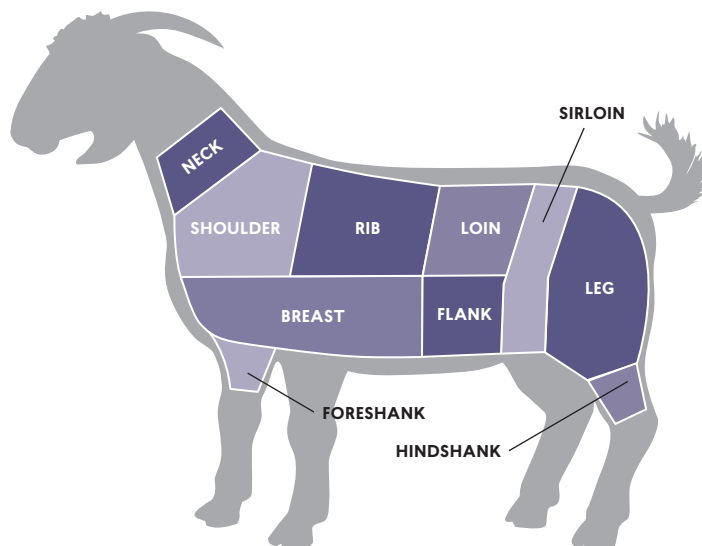
Goats have 15,000 taste buds.

450 million

There are approximately 450 million goats in the world.

Common Goat Cuts

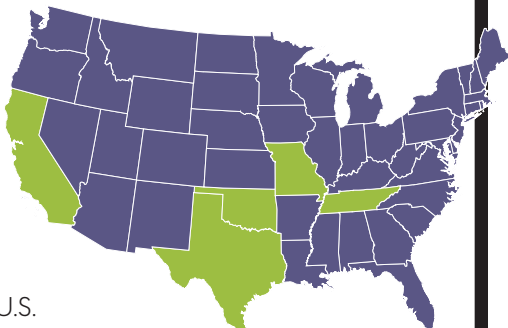
A goat carcass is divided into basic cuts (shown below), which have distinctive characteristics based on the amount of muscle tissue. Visit FFAnewhorizons.org to learn more.



Top Meat Goat States

Based on the USDA 2012 Census of Agriculture, the top meat goat-producing states include Texas, Tennessee, California, Oklahoma and Missouri.

Texas represents 38 percent of the entire U.S. meat goat inventory. Its dry climate, available forages and extending grazing season make Texas well-suited for meat goats.



Breeds of Meat Goats

THERE ARE MORE THAN 210 BREEDS OF GOATS IN THE WORLD, BUT SOME ARE BRED SPECIFICALLY FOR MEAT.

1 BOER: These large-framed goats are prized for their growth rate and fertility. They originated in South Africa and have short, curved horns.

2 FAINTING GOAT: Also called myotonic goats, these animals become rigid and fall over when startled. They are hardy and have a long breeding season.

3 SPANISH: Also called the brush or scrub goat, this was the standard meat breed in the U.S. until 1980, when the Boer goat was introduced. Spanish explorers brought their predecessors to America.

4 KIKO: Another large-framed goat, the Kiko originated in New Zealand and made its way to the U.S. in the 1990s. These goats are hardy and fare well in poor conditions.

5 PYGMY: Mostly kept as pets, these little guys have a surprising amount of meat on their compact bodies.

more
on our
app

Download the *FFA New Horizons* app to see FFA members' photos of their goats. For details on how to download the app, visit page 2.



ARTICLE SUMMARY:

'Tis so Sweet

Students in a food science and technology class in Ohio had the opportunity to learn about product development firsthand by working with the Velvet Ice Cream company to develop a new flavor of ice cream. Students learned about flavor profiles, went through

several different ideas, created a marketing plan, developed the front and back labels, and had other students in their high school taste test the new flavors. Velvet Ice Cream is even considering adding one of the flavors to their line as a limited edition

DISCUSSION QUESTIONS:

- 1 Would you enjoy developing new food products? Why or why not?
- 2 What challenges might you face as you try to develop a new ice cream flavor?
- 3 Which flavor developed by the students appealed to you the most? Why?
- 4 Which flavor developed by the students appealed to you the least? Why?

ACTIVITY:

Activity #1: After reading the article, students will use the worksheet "Flavor Creator" (Appendix 4) to create their own flavor of ice cream. A brief description and explanation of flavor profiles is also included in the worksheet. *Internet access is not required to complete this activity, but it could be beneficial to those students with no background knowledge of food product development.*

Activity #2: Students will use the worksheet "Food Is My Work" (Appendix 5) to research an available career in food science. *Internet access is needed to complete this activity.*

FFA TIP:

If students have an interest in digging deeper into the food science industry, put together a food science and technology career development event team. If your state does not offer this event, then talk to your local extension agent to help you put together a similar activity for your entire FFA chapter.

SAE TIP:

Students have both simple and complex options if they want a food science-related SAE. Some ideas include: making jams and jellies to sell at the local farmer's market, working at a local bakery, and creating a research project to determine people's ability to taste various flavors and determine if that impacts their ability to enjoy certain foods.

VOCABULARY:

Analyze
Comply
Components
Conformity
Curriculum
Ensure
Flavor profiles
Inclusion
Phenomena
Regulations
Sanitation
Variety

CAREER PATHWAY:

Food Products and Processing Systems

RELATABLE BOOKS, MOVIES AND LINKS:

A Visit to the Nestle'-Dreyer's Ice Cream Plant <https://vimeo.com/69806651>

Online Book: *Creating New Foods: The Product Developer's Guide* <http://www.nzfst.org.nz/creatingnewfoods/index.htm>

What is Food Science? <https://youtu.be/72eHulakdLc>

RELATABLE ARTICLES:

A Study of Flavor Profiles <http://www.cooksmarts.com/articles/study-flavor-profiles/>

Taste <http://udel.edu/~bcarey/ART307/project3/contents/taste.html>

APPENDICES:

Appendix 4 – Flavor Creator

Appendix 5 – Food Is My Work

STANDARDS ALIGNMENT:

AFNR

FPP02. Apply principles of nutrition, biology, microbiology, chemistry and human behavior to the development of food products.

CS.05. Describe career opportunities.

FFA Precept

FFA.PL-A.Action: Assume responsibility and take the necessary steps to achieve the desired results.

FFA.PL-C.Vision: Visualize the future and how to get there.

FFA.PL-E.Awareness: Understand personal vision, mission and goals.

FFA.PL-F.Continuous Improvement: Accept responsibility for learning

and personal growth.

FFA.PG-I.Professional Growth: Assume responsibility for attaining and improving upon the skills needed for career success.

FFA.PG-J.Mental Growth: Embrace cognitive and intellectual development.

Common Career Technical Core

AG-FD2 Apply principles of nutrition, biology, microbiology, chemistry and human behavior to the development of food products.

Common Career Technical Core

AG5 Describe career opportunities and means to achieve those opportunities in each of the

Agriculture, Food & Natural Resources Career Pathways.

NASDCTEc.

AGPA01.02 Conduct food product development and research activities that demonstrate application of food science principles to enhance products.

AGC09.02 Select, research and examine critical aspects of career opportunities.

Common Core-Reading: Informational Text

CCSS.ELA-Literacy.RI.9-10.2 Determine a central idea of a text.

CCSS.ELA-Literacy.RI.9-10.4 Determine the meaning of words and phrases.

Common Core-Writing

CCSS.ELA-Literacy.W.9-10.2

Write informative/explanatory texts.

Common Core-Speaking and Listening

CCSS.ELA-Literacy.SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions.

Common Core-Science and Technical Subjects

RST.9-10.1 Cite specific textual evidence to support analysis.

CCSS.ELA-Literacy.RST.9-10.2 Determine the central ideas or conclusions of a text.

CCSS.ELA-Literacy.RST.9-10.9 Compare and contrast findings presented in a text to those from other sources.

Common Core-Literacy in Science and Technical Subjects: Writing

CCSS.ELA-Literacy.WHST.9.10.2 Write informative/explanatory texts.

CCSS.ELA-Literacy.WHST.9.10.4 Produce clear and coherent writing.

CCSS.ELA-Literacy.WHST.9.10.7 Conduct short as well as more sustained research projects to answer a question.

CCSS.ELA-Literacy.WHST.9.10.8 Gather relevant information from multiple authoritative print and digital sources.

CCSS.ELA-Literacy.WHST.9.10.9 Draw evidence from informational texts to

support analysis, reflection, and research.

Common Core-Math Practices

CCSS.MP1 Make sense of problems and persevere in solving them.

CCSS.MP6 Attend to precision.

AFNR Career Ready Practices

CRP02. Apply appropriate academic and technical skills.

CRP04. Communicate clearly, effectively, and with reason.

CRP06. Demonstrate creativity and innovation.

CRP07. Employ valid and reliable research strategies.

CRP08. Utilize critical

thinking to make sense of problems and persevere in solving them.

CRP10. Plan education and career path aligned to personal goals.

CRP11 Use technology to enhance productivity.

P21 Skills

Communication

Critical Thinking and Problem Solving

Flexibility and Adaptability

Information Literacy

Initiative and Self-direction

Leadership and Responsibility

Productivity and Accountability

Think Creatively

Name: _____

Appendix 4

Aligned to the following standards:

FPP.02; FFA.PL-A; FFA.PG-I; FFA.PG-J; AG-FD2; AGPA01.02; CCSS.RI.9-10.2; CCSS.RI.9-10.4; CCSS.W.9-10.2; CCSS.SL.9-10.1; CCSS.RST.9-10.9; CCSS.WHST.9.10.2; CCSS.WHST.9.10.4; CCSS.WHST.9.10.9; MP1; MP6; CRP.02; CRP.04; CRP.06; CRP.08

Flavor Creator

Directions: Review the “Flavor and Taste Basics” sheet and then get creative. In the space below develop new, never-before-seen flavors of ice cream by filling in the ingredient labels. Be sure to explain why you think the flavor combinations will work well together.



Ingredient Label	
Base Flavor (circle one)	Chocolate or Vanilla
Flavor #1	
Flavor #2	
Description of Ice Cream (this should make a person want to eat it because it tastes so good!)	
Reason why these flavors would work well together	

Develop a TV commercial to advertise your new ice cream flavor. Use this space to describe the commercial using words and drawings.

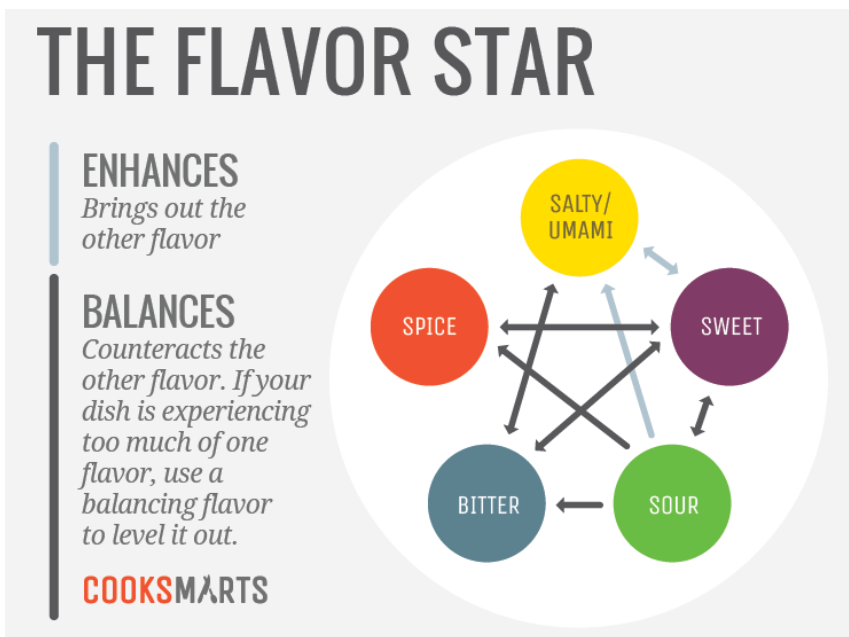
Name: _____

Flavor and Taste Basics

There are five official recognized tastes: salty, sweet, sour, bitter and umami. Umami is fairly new and is sometimes hard to describe, so some people just put it and salty together because they have similar characteristics, which some people struggle to distinguish between. Other people add the tastes of spicy/pungent.

Here are some charts and diagrams that explain how these tastes work together:

For more information visit <http://www.cooksmarts.com/articles/study-flavor-profiles/>.



Taste	Food Source	Basis of Taste
Sweet	Grains, Pasta, Rice, Bread, Starchy Vegetables, Dairy, Meat, Chicken, Fish, Sugar, Honey, Molasses	Carbohydrates, protein, fats
Sour	Citrus Fruits, Berries, Tomatoes, Pickled Foods, Salad Dressing, Alcohol	Organic acids: ascorbic acid, citric acid, acetic acid
Salty	Sea Salt, Soy Sauce, Salted Meats, Fish	Mineral salts
Pungent	Peppers, Chilies, Onions, Garlic, Cayenne, Black Pepper, Cloves, Ginger, Mustard, Salsa	Essential oils
Bitter	Green Leafy Vegetables, Green And Yellow Vegetables, Kale, Celery, Broccoli, Sprouts, Beets	Alkaloids or glycosides

Name: _____

Appendix 5

Aligned to the following standards:

CS.05; FFA.PL-A; FFA.PL-C; FFA.PL-E; FFA.PL-F; FFA.PL-G; FFA.PL-H; AGC09.02;
CCSS.RI.9-10.2; CCSS.RI.9-10.4; CCSS.W.9-10.2; CCSS.SL.9-10.1; CCSS.RST.9-10.1;
CCSS.RST.9-10.2; CCSS.RST.9-10.9; CCSS.WHST.9.10.2; CCSS.WHST.9.10.4; CCSS.WHST.9-10.7; CCSS.WHST.9.10.8; CCSS.WHST.9.10.9; MP1; MP6; CRP.02; CRP.04; CRP.06; CRP.07; CRP.08; CRP.010; CRP.11

Food Is My Work

Directions: There are many careers in food science; choose one career that interests you and complete the chart below.

Suggested Resources:

For a list of possible careers go to <http://sfs.wsu.edu/prospective-students/faq/food-science-careers/>.

To learn more about careers in this area try these resources:

- <https://collegegrad.com/careers/agricultural-and-food-scientists>
- <http://www.careersinfood.com/index.cfm/fuseaction/jobsearch.htm>
- http://study.com/article_directory/q_p/page/Agriculture/q_p/Glossary_of_Career_Education_Programs.html

Job Outlook:	Pay:	Minimum Education Required:
Work Conditions:	Job Title:	Skills Needed:
	Job Description:	

'TIS SO SWEET

Ohio FFA members get a taste of food science careers by developing new ice cream flavors



Versailles FFA members experiment with creating their own ice cream, starting with a vanilla or chocolate base, then adding unique flavors.

PHOTOGRAPHY BY Frank Ordoñez

FFA chapters and other student groups across Ohio have been touring Velvet Ice Cream's factory in Utica for decades to learn what it takes to create the smooth, creamy dessert. But in 2015, the Versailles FFA Chapter had the opportunity to go behind the scenes and conduct a food science project to develop a brand-new flavor for Velvet Ice Cream.

"Students in our food science and technology class worked in groups of two or three to design a new ice cream variety," says Dena Wuebker, Versailles FFA advisor. "The ice cream variety had to be a flavor Velvet was not currently selling, and each student group had to start with a vanilla or chocolate-based ice cream."

Wuebker worked with Velvet Ice Cream to create a curriculum for students to learn how to become ice cream makers, from inventing flavor profiles to packaging, shrink-wrapping and marketing the final product.

"We try to show students the science behind ice cream production," says Nathan Arnold, marketing manager at Velvet Ice Cream and an FFA alumnus. "We really value education and teaching youth about agriculture and food science. It's a growing industry, and Velvet Ice Cream looks for employees with a food science background."

The students began by consulting Chef Michael Delligatta from the Inn of Versailles to create their flavor profiles. He offered suggestions and sampled flavors the students created.

"The chef was helpful in getting students to think outside the box and enhance their flavors, so they didn't just taste like vanilla," Wuebker says. "A few students completely scrapped their first idea. One group initially wanted to make fish taco ice cream."

The flavors the students decided upon included lemon ginger, peanut butter and jelly, banana nut bread with salty caramel, red velvet s'mores, cinnamon sugar doughnuts, wittles with Skittles, berry lemonade sweet tea, and green apple Jolly Rancher. Students developed the front and back label of an ice cream container, including a

nutritional label for each variety, and created a marketing plan.

Taste tests were conducted at Versailles High School, where students chose their three favorites: red velvet s'mores, lemon ginger, and banana nut bread with salty caramel. Then those three flavors were taken to the 2015 Ohio State FFA Convention to be sampled by FFA members, parents, alumni and sponsors from across the state. Representatives from Velvet Ice Cream also sampled the flavors, and lemon ginger was their favorite.

"We liked the lemon ginger most because it had a ginger candy inclusion, which gave the lemon a spicy kick," Arnold says. "It's a flavor we have considered adding to our lineup for a limited edition variety."

Regardless of what career path students choose, Wuebker says the food science project was worthwhile for all 22 students who participated.

"It helped them understand the process of making a product and understand there are regulations, such as FDA or USDA standards, you have to comply with," she says. "They also learned how a business markets a product because they had to market their own product. The students really enjoyed it – many said it was their favorite part of the school year."

Three members of Versailles FFA were invited to do a presentation about their ice cream project on the opening day of the 2015 Ohio State Fair.

Versailles High School offered the food science and technology course for the first time in 2014-2015, and Wuebker plans to continue teaching it every other year.

"We change our courses to meet demands in the industry, and there are more than 1,000 food processing plants in Ohio," she says. "About 50 percent of those plants are within 50 miles of our school, so that's one reason we felt the need to teach this class. Ohio is fifth in the nation for food processing plants, so there's a huge demand for workers in the food science field."

– Jessica Mozo

FOOD SCIENCE CAREERS

Versailles FFA members used this fun ice cream project to get a taste of the food science industry. If that sounds interesting to you, here are six areas to consider in this important career field.

PRODUCT DEVELOPMENT:

Develop new food products or improve the quality, performance and/or safety of existing products.

RESEARCH AND DEVELOPMENT:

Investigate scientific principles and phenomena as they pertain to specific food components, food products or food processes.

TECHNICAL SUPPORT:

Combine knowledge of raw materials and ingredients with food processing applications. Often they work closely with product development in the manufacture of food products.

QUALITY ASSURANCE:

Analyze the components of food products and monitor the finished product for conformity to company and government standards.

REGULATION:

Develop policy, enforce food sanitation and labeling regulations, or ensure the safety of our food supply.

MANAGEMENT:

Be involved in the organization, operation and development of food processing companies. Oversee employees and operations in the processing of specific foods.

Source: Pennsylvania State University Department of Food Science