

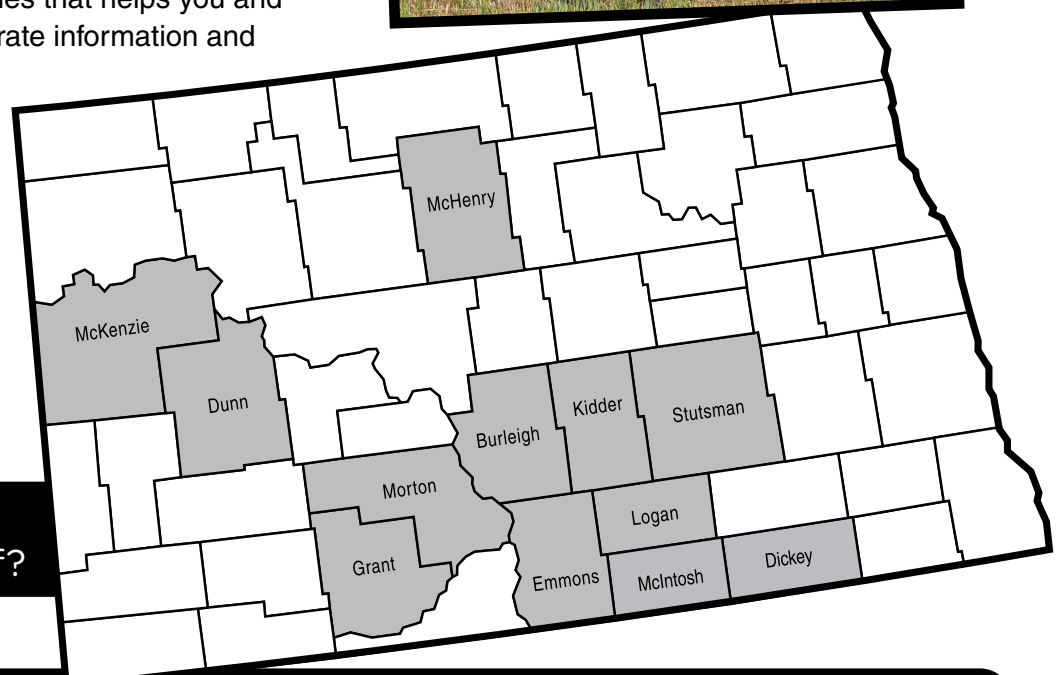
Beef

This issue of the North Dakota Ag Mag focuses on beef production, processing, distribution and consumption. The information and activities are geared primarily toward the state's third, fourth and fifth graders.

The Ag Mag is distributed three times per year. Subscriptions are free, but if you're not on the mailing list or if you know someone else who wants to be added, contact the North Dakota Department of Agriculture at 1-800-242-7535 or ndda@nd.gov.

The magazine also is on the North Dakota Agriculture in the Classroom website at www.nd.gov/ndda/ag-classroom.

This magazine is one of the N.D. Agriculture in the Classroom Council activities that helps you and other K-12 teachers integrate information and activities about North Dakota agriculture across your curriculum in science, math, language arts, social studies and other classes. It's a supplemental resource rather than a separate program.



Answers to
Where's the Beef?

Beef Production

Idea: There are about 250 different breeds of cattle around the world. Talk with your students about what a “breed” is and what breeds of cattle are in your area. Ask individuals or teams of students to research and write brief reports about a breed of beef cattle, including physical traits and history. Breeds might include Hereford, Angus, Charolais, Galloway, Brahman, Longhorn and BueLingo, which was developed in North Dakota. On page 3, Zebu is listed as a breed of cattle that originated in India, but technically Zebu isn’t a breed but rather an entire class of hump-backed cattle. What other breeds fit in this class? See www.cattle-today.com or www.kidscowsandmore.org/beef for more breed information.

Idea: Have students research America’s cattle trails of the 1800s and draw maps of the most important trails. Why were these trails first used, and why were they abandoned?

Idea: Have students visit the Kids’ Zone at www.animalsmart.org to become a Jr. Animal Scientist and learn more.

Idea: Use the videos, games and images at www.beefitswhatsfordinner.com/raising-beef/sustainability-for-kids for students to learn how beef farmers and ranchers are committed to raising cattle in a way that is good for the planet – how cattle provide beef to eat but also preserve the land where they live.

Idea: Use the At Home on the Range lesson plan at <https://agclassroom.org/matrix/lesson/554/> to have students investigate rangelands by growing their own grass to represent a beef ranch.

Idea: Incorporate history and art into beef lessons with Making a Brand for Ourselves the “Cowboy” Way at <https://agclassroom.org/matrix/lesson/527/>.

Idea: Have your students play The Steaks are High, an online game that illustrates how farmers and ranchers care for their animals and the environment in the beef production process, at www.myamericanfarm.org/games/the-steaks-are-high.

Idea: Learn more about beef cattle in North Dakota at www.ndstudies.gov/gr4/north-dakota-agriculture/part-2-production-agriculture/section-7-beef-cattle and in other sections of the North Dakota Agriculture e-textbook at www.ndstudies.gov/gr4/north-dakota-agriculture.

Idea: Learn about Marquis de Mores at www.nps.gov/thro/learn/historyculture/marquis-de-mores.htm.

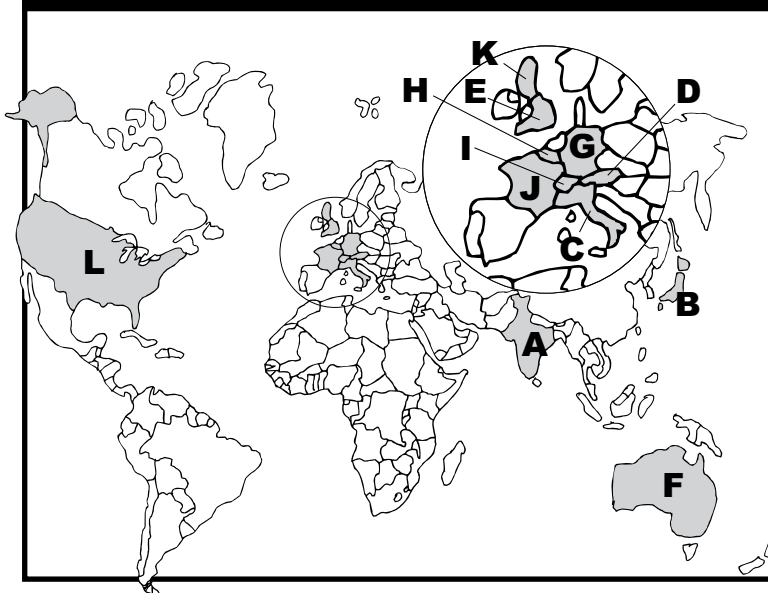
Idea: Learn about cattle drives at https://en.wikipedia.org/wiki/Cattle_drives_in_the_United_States.

Idea: See more information about beef cattle and breeds at https://en.wikipedia.org/wiki/Beef_cattle.

Answers to Beef in North Dakota: Then and Now

- | | |
|-----------------------|---------------|
| 1. Marquis | 5. internet |
| 2. refrigerated | 6. identified |
| 3. Medora | 7. auctions |
| 4. computers and apps | 8. market |

Answers to Where in the World?



Background Information

Caring for Beef Cattle

For beef cattle to grow and reproduce, they need proper attention and care. Cattle depend on ranchers for shelter, feed, water and medical attention. The rancher’s job is to provide for the animals’ needs and observe them for potential problems. Cattle that fail to grow or reproduce properly when given insufficient or improper care do not produce meat economically. If this happens, the rancher has fewer animals or less product to sell, and the cost of producing animal products increases. This means less income for the rancher to pay for feed, bedding, veterinary services and other costs. So the rancher’s income depends on providing good animal care.

Grazing to Reduce Waste

Most cattle in the U.S. and around the world graze on land that can’t be used for anything else because the terrain is too steep or hilly for building houses, or too rocky or dry for growing food crops. About half the area of the U.S. (excluding Alaska and Hawaii) falls into this category. At least 90% of this land is covered with grass that contains cellulose, which is indigestible by humans. However, cattle can digest this grass, converting it into beef and dairy products. This land would go to waste if it wasn’t used for grazing cattle.

Adapted from “Wow that Cow!” by the American National CattleWomen, Inc.

Idea: Ask a beef producer to share samples of what is fed to cattle.

Idea: Have students make Dirt Babies to learn the importance of cattle and grazing. This lesson concentrates on what makes cattle special so they can eat grass, how cattle are able to help us take good care of our range and grazing lands, and why cattle are important in providing good nutrition for us.

Supplies:

- Knee-high hose
- Grass seed
- Soil
- Tall (junior size) baby food jar

Steps:

Place a pinch or two of grass seed, like annual ryegrass, in the hose toe, which will be the head or top of the dirt baby.

Pack a handful of soil in the end of the hose on top of the seed. Tie a knot in the hose under the ball of soil. Place the top of the hose (which is the bottom of the dirt baby) in a tall baby food jar filled with water. The soil will absorb the water through the hose and saturate the head of the dirt baby that is above the mouth of the jar. In 10-15 days the seed should germinate through the hose. You may have to cut a few small holes to aid in this step.

To decorate, cut a round piece of fabric to fit over the mouth of the jar and add lace, ribbon or other decoration. Glue jiggle eyes on the face, and cut out a heart-shaped piece of felt to glue in place for the mouth.

Water as needed. Cut and style the "hair."

Dirt Baby Script

Making a dirt baby takes just a few supplies: a knee-high hose, a cup of potting soil, a baby food jar, grass seed, water, pieces of felt, scraps of fabric, and jiggle eyes.

Within a few weeks, this dirt baby will have a beautiful head of green hair that will grow and grow.

Why does this have anything to do with cattle? Because cattle love grass! Cattle are special because they can eat and utilize grass to get the nutrients they need.

They are able to do this because they are ruminant animals with four compartments to their stomachs. Cattle chew grass and swallow it. Later, they start the rumination process by "burping" the grass mass back from the first compartment known as the *rumen*. The cattle rechew their "cud" (which looks a lot like when you have a mouth full of bubble gum). The food is then swallowed again

where it undergoes further chemical breakdown as it passes through the remaining stomach compartments known as the *reticulum*, *omasum* and *abomasum*.

You and I do not have this ability so we rely on cattle to get the nutrients from grass and change it into nutritious, delicious beef that we can eat to get the zinc, iron and protein we need each day.

It is important that we have cattle that have this ability because 64% of the continental U.S. is agricultural land and 2/3 of that land is grazing land. That adds up to about 1.1 billion acres of grazing land in the United States. Grazing means cattle walk across the land and eat the vegetation they find. This grazing promotes new grass growth — just like when you mow your lawn at home.

The cattle's hoof prints help aerate the soil and leave places that will hold water when it rains to prevent runoff. Cattle also provide natural fertilizer as they walk across the land. They can even spread seed across the prairie so the range land has many different types of grasses in different places. Grazing actually maintains, restores and encourages variety among plant life and helps prevent forest and prairie fires.

Grass

I'll tell you 'bout a family, a most important bunch.
They aren't your friends or neighbors, but I still have a hunch.
You know this family pretty well, you see them every day.
But if you think they're people, then think another way.

This family's a converter of light that's from the sun.
In other words of energy, right into food for one.
To benefit our wildlife, assist our livestock, too.
A family most remarkable but understood by few.

Grass roots are fine and fibrous, and they enrich the soil,
And keep it firm and stabilized, and so it helps to foil
Erosion's cruel forces, by water and by wind,
Make sure soil productivity will never, ever end.

It feeds a world of people, it feeds both man and beast,
And most folks don't appreciate or understand the least
Just how this good Grass family keeps all the Earth alive,
Because without grass, mankind could not survive.

Source: Stan Tixier, Society for Range Management

The Clean Scene Rap

When cooking and eating, it's important to be clean.
Make some bubbles now to be in the clean scene.
Once you handle meat and before you eat,
Get rid of those bad germs. Clean can't be beat.
Keepin' it clean means surfaces too.
Utensils get germs, just the same as you.
Sing "Happy Birthday" twice, make bubbles and clap,
'Cause clean is cool in the clean scene rap!

Adapted from
Pennsylvania Beef Council

Wash your hands with soap and water for at least 20 seconds before and after handling food, and after going to the bathroom. An easy way to measure this time is to sing "Happy Birthday" twice while scrubbing.

Beef Processing

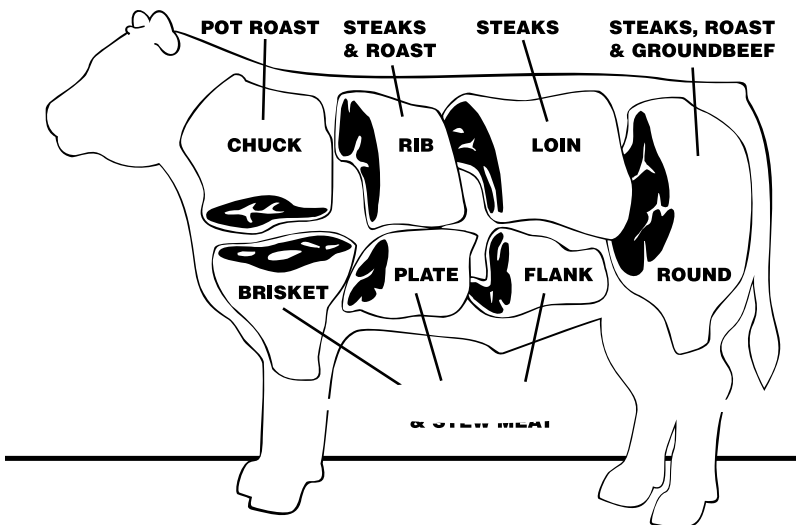
Answers to Meat and More Math

- 1,350 pounds – 520 pounds = **830 pounds**
- 830 pounds X .34 = **282 pounds**
- \$7.99 – \$2.50 = **\$5.49 per pound**
- \$5.99 / pound X 3 pounds = **\$17.97**
- 4 burgers / pound X 3 pounds = **12 burgers**
- 1.5 pounds X 3 = **4.5 pounds**
- 160 degrees F – 135 degrees F = **25 degrees F**
- 11:45 a.m. + 2 hours = **1:45 p.m.**
- 20 footballs/cowhide X 6 cowhides = **120 footballs**
- 576 baseballs ÷ 144 baseballs/cowhide = **4 cowhides**

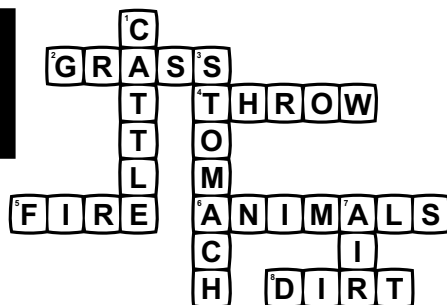
Idea: Have students brainstorm careers related to the beef industry.

Idea: Have students bring cattle byproducts. Discuss and make a display.

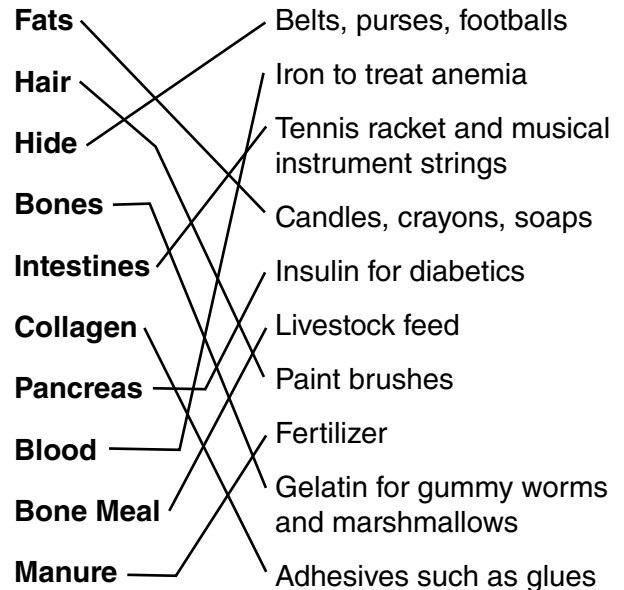
Idea: Enlarge this “Where Does Beef Come From?” graphic to project or copy. Talk about what part of the beef animal the different cuts of beef students see at the grocery store come from.



Answers to Sustainability on the Ranch



Answers to Beef Byproducts



Career Corner

Match Game

Match these definitions with the bold words from this Career Corner by writing the bold word that matches the definitions.

- feedlot** a plot of land where cattle live together in large pens and are fed grain and hay to grow efficiently
- calves** young beef or dairy animals, usually less than one year old
- heifer** a young female beef or dairy animal that has not yet had a calf
- pasture** a large area of land naturally covered with grass and other plants where cattle live and graze (eat the grass and plants)
- cows** adult female beef or dairy animals that have had at least one calf

Beef Distribution

Answers to The Journey of Beef

- Calves are born on farms and ranches, weighing about 80 pounds at birth.
- When cattle are about a year old (called yearlings) and weigh about 800 pounds, they are usually sold at an auction or livestock market to a feedlot where they eat grain along with hay or silage until they weigh about 1,300 pounds.
- When cattle are ready for market at about 1,300 pounds (14-20 months of age), they may be sold to a packer or processor.
- Finished cattle are trucked to a packing plant where they are converted to beef to eat and byproducts.
- From the packing plant, beef is shipped to the supermarket where it is purchased to be eaten at home or to schools, restaurants and hospitals.

Idea: Visit a butcher shop or supermarket to learn about how beef arrives and is marketed.

Beef Consumption

The Protein Group

USDA's www.choosemyplate.gov includes protein foods as part of a healthy lifestyle. All foods made from meats, poultry, seafood, processed soy products, beans, peas, eggs, nuts and seeds are part of this group. The amount of food from the protein group you need to eat depends on your age, sex, height, weight and physical activity level. Most Americans eat enough food from this group but need to make leaner and more varied selections of these foods.

In general, 1 ounce of meat, poultry or fish, ¼ cup cooked dry beans, 1 egg, 1 tablespoon of peanut butter or ½ ounce of nuts or seeds is considered as 1 ounce equivalent from the protein group. Boys and girls ages 9 to 13 who get less than 30 minutes per day of moderate physical activity usually need about a 5-ounce equivalent from the protein group every day. A 3-ounce serving of meat is about the size of a deck of playing cards or computer mouse.

Idea: Have students go to www.myplate.gov to develop their personalized eating plans and print a worksheet to track their food intake and physical activity.

Idea: Talk about the different ingredients that can make up a hamburger sandwich and which segment of the plate each fits in. Examples: bun – grains, beef – protein, cheese – dairy, tomato – fruits, onion – vegetables.

Idea: Have students develop a print or radio advertisement for beef.

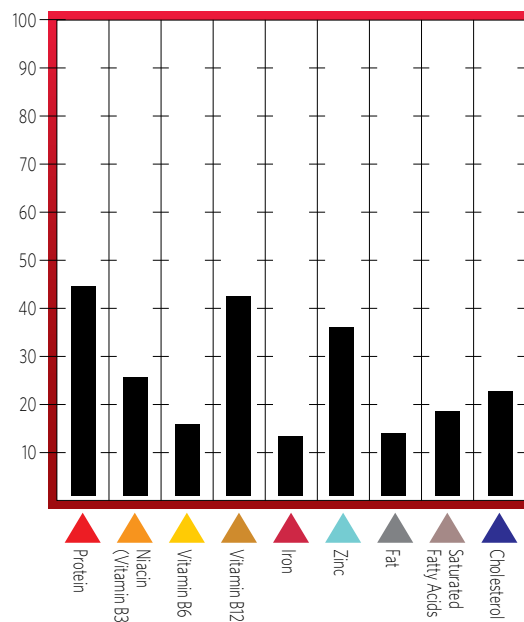
Idea: Have students use grocery ads to develop or complete math problems related to different prices of various cuts of beef. Include processed and prepared meats.

Idea: Have students create their own beef recipe. Use www.beefitswhatsfordinner.com for ideas.

Answers to Beef Gives Athletes ZIP and More

- Beef is packed with power nutrients for everybody but especially for (athleets or **athletes**).
- These nutrients have ZIP: zinc, iron and (**protein** or proteen.)
- Zinc is needed for a healthy (immyoon or **immune**) system and to control your appetite.
- Iron helps carry (**oxygen** or oxegen) to your body's cells and tissues.
- Protein helps keep your body energized and supports (**muscle** or mussel) growth.
- One serving of cooked beef is 3 (ownces or **ounces**), which is about the size of a deck of cards or computer mouse.
- Tony Romo, a former NFL (courterback or **quarterback**), shares why beef is important in an athlete's diet at www.beefitswhatsfordinner.com.

Answers to Ground Beef Nutrition



Answers to Hamburger History

- Russia
- German
- chef
- sandwich
- American
- favorite

Resources

North Dakota Beef Commission

4023 State Street, Bismarck, ND 58503
701-328-5120
ndbeef@ndbeef.org
www.ndbeef.org

Educational Resources

www.ndbeef.org/education/
classroom-resources
www.facebook.com/ndbeefcommission

Additional Websites

www.sciencekids.co.nz/sciencefacts/animals/cow.html – a New Zealand science teacher’s site
www.americasheartland.org/education/index.htm – study guides, stories and videos for both teachers and students sponsored by a collaboration of organizations.
www.beefitswhatsfordinner.com/raising-beef/sustainability-for-kids – games, quizzes, videos, recipes and more that show how ranchers raise cattle

North Dakota Standards Related to this Beef Ag Mag

Economics

E.3-5.1 Describe how goods and services are produced and distributed.

G.3-5.3 Use maps, photographs, and other representations to explain relationships between locations of places, regions, and their environmental characteristics.

G.4, RI.2 Determine the main idea of a text and explain how it is supported by key words.

G.4, RI.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

English Language Arts and Literacy

G.3.4.5 W2. Write information/explanatory texts to examine a topic and convey ideas and information clearly.

A. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. Develop the topic with facts, definitions, and details.

C. Use transitional words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.

D. Provide a concluding statement or section. Produce clear and coherent writing in which the development and organization are approximate to task, purpose, and audience.

Health

Standard 1: Growth and Development

Body systems

3.1.4 Describe the effects of healthy and unhealthy foods on the body (e.g., healthy foods provide nutrients for growth and development; unhealthy foods contribute to a lack of energy and obesity)

Mathematics

Number and Operation in Base Ten:

3.NBT.2 Using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction, fluently add and subtract within 1,000.

4. NBT.5 Using strategies based on place value and the properties of operations, multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers.

5.NBT.5 Fluently multiply multi-digit whole numbers using strategies flexibility, including the standard algorithm.

Measurement/Data:

3.MD.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve elapsed time word problems on the hour and the half hour, using a variety of strategies.

4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volume, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit.

Science

Standard 2: Students use the process of science inquiry

3.4.2. Life Cycles: Describe the life cycles of plants and animals (e.g., birds, mammals, grasses, trees, insects, flowers)

4.3.4 Identify principal exports of North Dakota (e.g., crops, energy, livestock)

North Dakota Agriculture in the Classroom Activities

This **Ag Mag** is just one of the North Dakota Agriculture in the Classroom Council projects. Each issue of the Ag Mag focuses on an agricultural commodity or topic and includes fun activities, bold graphics, interesting information and challenging problems. Send feedback and suggestions for future Ag Mag issues to:

Becky Koch
NDSU Agriculture Communication
701-866-6162
becky.koch@ndsu.edu

Another council teacher resource is **Project Food, Land & People** (FLP). Using the national FLP curriculum, N.D. Ag in the Classroom provides 600-level credit workshops for teachers to instruct them in integrating hands-on lessons that promote the development of critical thinking skills so students can better understand the interrelationships among the environment, agriculture and people of the world. Teachers are encouraged to adapt their lessons to include North Dakota products and resources.

Project Food, Land & People's 55 lessons include:

- Amazing Grazing
- Cows or Condos?
- By the Way
- Seed Surprises
- Schoolground Caretakers
- Could It Be Something They Ate?
- What Piece of the Pie?
- and many more.

For information, contact:

Jill Vigesaa
N.D. Farm Bureau Foundation
701-799-5488
jill.vigesaa@gmail.com

The N.D. Geographic Alliance conducts a two-day **Agricultural Tour for Teachers**. The tour includes farm and field visits, tours of agricultural processing plants to see what happens to products following the farm production cycle, and discussions with people involved in the global marketing of North Dakota farm products.

For information, contact:

Jeffrey Beck
North Dakota Geographic Alliance
701-240-9231
jeff.beck@minot.k12.nd.us

Educators may apply for **mini-grants for up to \$500** for use in programs that promote agricultural literacy. The Agriculture in the Classroom Council, working with the N.D. FFA Foundation, offers these funds for agriculture-related projects, units and lessons used for school-age children. The mini-grants fund hands-on activities that develop and enrich understanding of agriculture as the source of food and/or fiber in our society. Individuals or groups such as teachers, 4-H leaders, commodity groups and others interested in teaching young people about the importance of North Dakota agriculture are welcome to apply.

Examples of programs that may be funded: farm safety programs, agricultural festivals, an elementary classroom visiting a nearby farm and ag career awareness day. Grant funds can be used for printing, curriculum, guest speakers, materials, food, supplies, etc. More ideas and an application are at www.ndaginclassroom.org.

For information, contact:

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ballen@ndffa.org

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Agriculture Commissioner
Doug Goehring

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